



REGIONAL TRANSIT WAYFINDING

GUIDELINES & STANDARDS



VERSION 6.0—AUGUST 1, 2019

SPONSORED BY:



METROPOLITAN
TRANSPORTATION
COMMISSION

TABLE OF CONTENTS

1. GENERAL	4
1.1 Application	6
1.2 Reference Standards	6
1.3 Acronyms and Abbreviations	7
1.4 Basics of Connectivity	8
1.5 Transit Hub Wayfinding Design Principles	8
1.6 Signage Design Principles	11
2. SIGNAGE TYPES	12
2.1 Transit Center Identification	13
2.2 Wayfinding	18
2.3 Information Cube	23
2.4 Wayfinding Kiosk	24
2.5 Transit Information Display (TID)	30
2.6 Real-Time Information Display Systems	42
3. SIGN PLACEMENT	44
3.1 Wayfinding Design Principles	45
3.2 Sign Placement Principles	47
4. SIGN FORMAT & DESIGN	48
4.1 Pictograms and Logos	49
4.2 Sign Conventions	51
4.3 Message Conventions	66
4.4 Typeface	68
4.5 Colors	71
5. MATERIALS & CONSTRUCTION	73
5.1 Materials	74
5.2 Construction	75

continued on next page ►

TABLE OF CONTENTS (continued)

APPENDICES

A. TRANSIT INFORMATION DISPLAY MAP GRAPHIC GUIDELINES

1.0 Page size	A2
2.0 Size of elements	A2
3.0 Headers/common sidebar elements	A3
4.0 Station Map	A8
5.0 Transit Stops	A12
6.0 Combined Station+Stops Map (referred to as Transit Stops)	A17
7.0 Transit Routes	A18
8.0 Schedules & Fares	A21
9.0 Artwork	A28
10.0 Site/Location-Specific	A36
11.0 Production	A38

B. CONSTRUCTION DRAWINGS

Construction Drawings	B3
---------------------------------	----

C. STANDARD SPECIFICATIONS

Decorative Metal	C1
Post and Panel Wayfinding System	C9
Illuminated Cabinet Signage	C15
Real-Time Information Display	C24

D. REGIONAL REAL-TIME ELECTRONIC TRANSIT INFORMATION DISPLAYS (ETIDS) REQUIREMENTS & SPECIFICATIONS

Regional Real-Time Electronic Transit Information Displays (ETIDS) Requirements & Specifications	D2
---	----

E. ADDITIONAL WAYFINDING INITIATIVES

1

GENERAL

Development of this document was sponsored by the Metropolitan Transportation Commission (MTC). This document provides standards for connectivity signage at transit stations designated as regional hubs. These standards are binding at these hubs, but are recommended for adoption at all existing and future transit hubs within the San Francisco Bay Area and, with suitable modifications, may be useful elsewhere.

BASIC PURPOSES:

- To efficiently and safely guide and direct the public from one transit system to another transit/transportation system, including schedule information and information regarding transfers between different transit systems.
- To develop a common “look” and “feel” and apply consistent connectivity signage conventions among regional transit operators.
- To improve movement within hubs and give information regarding surrounding area.
- Wayfinding signs installed at MTC-designated regional transit hubs are covered specifically by these technical standards and are subject to MTC approval.

In particular, these criteria cover specific connectivity requirements for:

- Wayfinding Signage
- Transit Information Displays
- Real-Time Displays

1.1 APPLICATION

These criteria apply to MTC-designated regional transit hubs. Twenty-one regional transit hubs have been identified and will be subject to these criteria. In addition, three airports will also incorporate elements of these criteria. The selected hubs include those that provide connections between several different service operators, those that have very high levels of transferring between the services of different operators, and those that have a prominent geographic or strategic location in a particular county or sub-region. It is anticipated that there will be new hubs coming online in the future as part of MTC's Regional Transit Expansion Program (Resolution No. 3434) that includes several new rail bus and ferry expansion projects. Some of these new expansion projects' hubs will become part of the regional hub system and therefore will be subject to these criteria. Other capital projects that support transit connectivity and are funded with regional discretionary funds may be subject to these standards in the future.

Portions of these criteria shall serve as tools for wayfinding system planning at transit stations and stops within the MTC jurisdiction which are not currently designated transit hubs, particularly stations and stops providing connecting service between more than one transit operator whenever funding is available for wayfinding improvements.

Wayfinding conventions described in these criteria may also be used to extend wayfinding into the communities beyond the area prescribed for transit hub connectivity signage and information.

1.2 REFERENCE STANDARDS

Final Summary Report, MTC Transit Connectivity Plan, May 1, 2006, and Appendices, particularly Appendix A-4, Connectivity Guidelines, Wayfinding, and Appendix C, Memorandum 4, Proposed Wayfinding Signage Program. Refer to: <http://mtc.ca.gov/planning/connectivity/>

- California Building Code
- U.S. Department of Justice, ADA Accessibility Guidelines for Buildings and Facilities. Refer to: <http://www.ada.gov/stdspdf.htm>
- The American Institute of Graphic Arts, AIGA

- U.S. Department of Transportation, Reproduction Art and Guidelines
- Transportation Research Board, Transit Cooperative Research Program (TCRP): Report 12, Guidelines for Transit Facility Signing and Graphics.
Refer to: <http://www.tcrponline.org/bin/publications.pl>
- California Manual on Uniform Traffic Control Devices (MUTCD)
Refer to: http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/ca_mutcd.htm
- U.S. Department of Transportation, FHWA, Standard Highway Signs. Refer to: http://mutcd.fhwa.dot.gov/ser-shs_millennium.htm/
- In addition to the specific signage design requirements specified and illustrated herein, refer to TCRP Report 12, Chapter 6, for general signage design guidelines. Refer to: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_12-a.pdf

1.3 ACRONYMS AND ABBREVIATIONS

ADA	Americans with Disabilities Act
Clipper®	San Francisco Bay Area's "Smart Card" for transit fare payment
FHWA	Federal Highway Administration
HSP	Hub Signage Program
MTC	Metropolitan Transportation Commission
MUTCD	Manual on Uniform Traffic Control Devices
RTD	Real-Time Display
TCRP	Transit Cooperative Research Program
TID	Transit Information Display

1.4 BASICS OF CONNECTIVITY

The transit rider or the customer generally has one purpose in mind—getting from here to there on transit with the greatest ease and convenience possible. The customer’s ease of transferring from one transit system to another is “connectivity.”

Connectivity is an indicator of a customer’s ability to use more than one transit system for a single trip. Effective connectivity improves a transit trip that requires multiple operators to travel to work, school, a government service center, a shopping district, or other destinations. By making a multi-operator trip nearly as easy as a single operator trip, good connectivity can attract new transit riders, retain existing riders and increase people’s mobility. Good connectivity results in a convenient and ‘seamless’ transit system by reducing travel times, providing more reliable connections, making it easier to pay, and ensuring that transfers are easy and safe.

1.5 TRANSIT HUB WAYFINDING DESIGN PRINCIPLES

- A. Each transit hub itself should be identified with signage so that various user groups (pedestrians, bicyclists, private automobile users, and transit riders) recognize its location. Prominent use of operator logos is important to let the public know which transit services are available at the hub. Transit hub locations shall be identified with the hub name, where applicable, and hub operator logos. Refer to Section 2.1: Transit Center Identification for examples.
- B. Within the transit hub, provide wayfinding signage consisting of directional signage and maps to connecting bus stops, shuttle stops, taxi stands, bicycle routes, and pedestrian routes, as well as nearby streets, attractions, and landmarks.

C. Directional signs should:

- Direct customers within a transit hub to transit stops and stations, taxi stands, ferry terminals, exits, and other facilities and amenities.
- Direct customers to transit information displays and real time information systems.
- Direct customers into and away from the transit hub via bike and pedestrian paths and adjoining streets.
- Direct customers to nearby streets, points of interest or used for north/south/east/ west orientation purposes (most often used on kiosk).

D. Provide clear identification of local transit connections.

Operator logo, and characteristic colors (adopted to signify transit connections or to identify a particular transit system) shall be used to identify various transit services. Specific platforms and stops should be identified with route designations (numbers and letters) and destinations.

E. Transit connectivity information at hubs shall include both local and regional scale maps showing transit routes and popular destinations near transit services. These maps should emphasize connectivity between transit systems.

- These local and regional maps help orient customers and help them find their connecting transit or their destinations in the surrounding community. These maps and other information should be sufficient to help customers determine what transit system/route will get to their destination, where they can find the transit stop, and the particular schedule for the connecting service.
- Schedule information shall, at minimum, include frequency of service during different periods of the day and week. In addition, there shall be an explanation of payment (such as fares, “exact change” requirement, and acceptability of transfers and Clipper®).
- Information shall be presented in a consistent manner among transit system to aid customers’ understanding.

- F. Real-time transit information allows customers to know when to expect their next bus or train. This tool is an important component of regional transit connectivity. Providing real-time and accurate transit information can not only enhance transit usage, but can also provide a more accurate means for the public to review transportation alternatives in the area, which could result in mode shifts to public transportation.
- Regional real-time displays (e.g. displays funded by the region to provide real-time information for multiple transit agencies connecting through a transit hub) should be placed at locations in the hub accessible to all transit customers since the signs display transit departure information for multiple transit agencies. Regional real-time displays should be outside any paid station areas to enable decision-making prior to entering the transit system. The number of regional real-time display locations will vary depending on the size of the hub and the number of customer access points. Placement of regional real-time displays shall be adjacent to each TIDs location wherever possible.
 - Non-regional real-time displays can be placed at several locations within the transit hub: 1) directly outside the paid station area to enable decision-making prior to entering; 2) within the station to direct passengers to the correct platform or stop (especially important if loading locations change frequently) and 3) at the stop itself to provide real-time information as passengers wait and to assist in ensuring that they board the correct vehicle. The displays should be easy to read and provide continuous updates.
- G. MTC shall be responsible for keeping all information concerning the transit system stops, routes, fares, and schedules up-to-date (consisting of TIDs and wayfinding kiosk inserts installed at the twenty-four (24) Transit Hubs identified in the Transit Connectivity Plan). Signage and information systems shall be designed to facilitate updating of information. In addition, there shall be a procedure in place to maintain the wayfinding elements, including the real-time displays. These roles and responsibilities are fully defined in MTC Resolution 3866 (Transit Coordination Implementation Plan).

1.6 SIGNAGE DESIGN PRINCIPLES

- A. Ensure consistency throughout the MTC-designated transit hubs so that there is a recognizable regional look and feel, including the following characteristics for regional sign types:
 - Size, shape, and color.
 - Content and format
 - Method and location of mounting
 - Construction and materials
- B. Signs shall convey a clear, simple, and appropriate message.
- C. Signage in the public right of way shall be in accordance with applicable codes and standards including those of the local jurisdiction.
- D. Maximize usage of graphic symbol signs and reinforce graphic symbols with concise text, as appropriate.
- E. Ensure visibility and legibility.
 - As applicable, organize signage and information displays together in specific zones.
 - Utilize typeface and symbol size specified in this standard. Verify that size is appropriate for viewing distance. Refer to TCRP Report 12.
 - Provide well-illuminated signs and graphics; use appropriate contrasting background; and minimize glare to ensure visibility and legibility. For definition of contrasting background, refer to TCRP Report 12.

2

SIGNAGE TYPES

For more specific technical elements such as content graphics, fonts and colors, please refer to the appendices covering each of these items.

Regional transit wayfinding sign types to be discussed:

- Transit Center Identification
- Wayfinding
- Information Cube
- Wayfinding Kiosk
- Transit Information Display
- Real-Time Information Display Systems

2.1 TRANSIT CENTER IDENTIFICATION

- Entrance identification's primary purpose is to help current and potential transit users identify the entrance to hub, station, bus bay, or ferry dock. The sign shall prominently feature name of hub or station and operating agencies' logos.
- Design of the entrance identification will be tailored to station type and, when applicable, architecture. Specific design will be determined on a hub-by-hub basis by the owner operator in consultation with the hub stakeholders. Examples of transit entrance identification elements are vertical and horizontal pylon signs and signs mounted to an architectural element. (See Fig. 2.1A-C)
- Hub identification must be easily legible from a distance when approaching station/hub.



FIG 2.1A
Vertical Transit Center Identification, Palo Alto



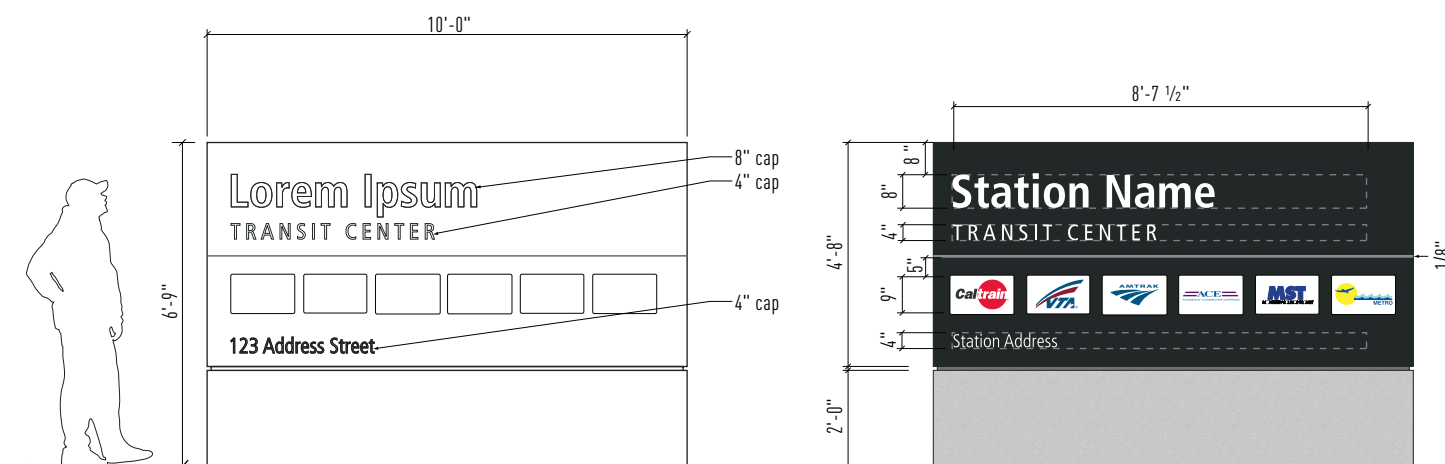
FIG 2.1B
Horizontal Transit Center Identification, San Jose Diridon



FIG 2.1C
Location Specific Transit Center Identification, San Francisco 4th & King

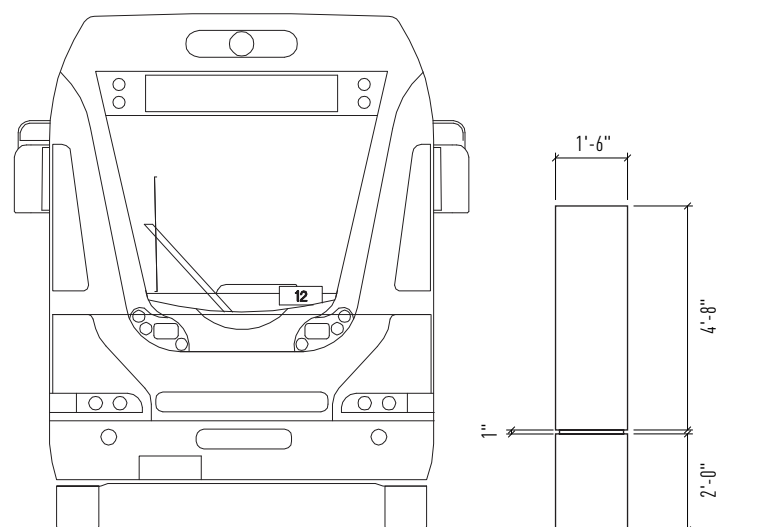
TRANSIT CENTER IDENTIFICATION: A1 HORIZONTAL

A1 Horizontal Transit Identification should be located at the entrance of a hub. This sign should not be a visual obstruction and should be used at hubs with more available property.

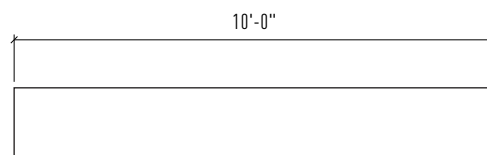


1 Type A1 - Front Elevation
Scale: 1/4" = 1'-0"

2 Type A1 - Typical Artwork
Scale: 1/4" = 1'-0"



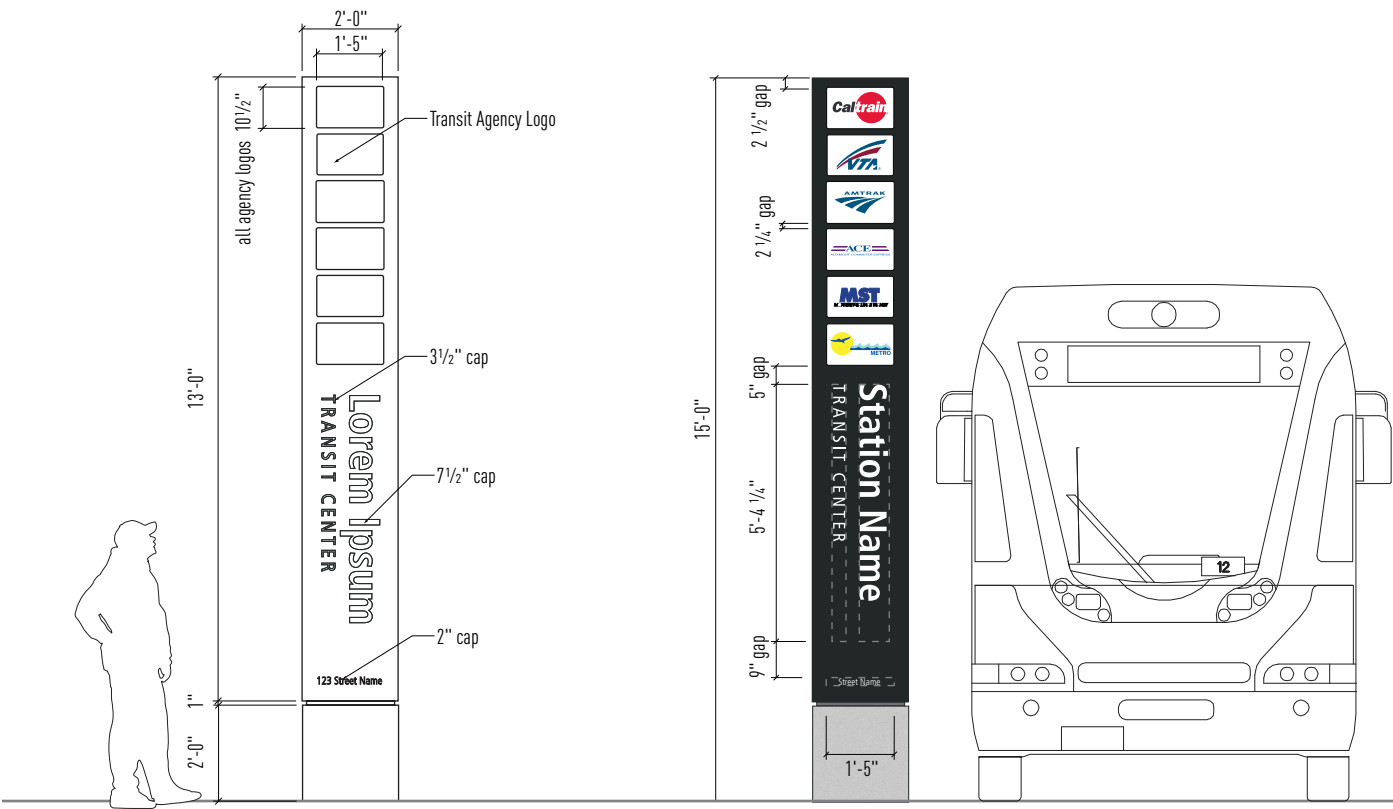
3 Type A1 - Side Elevation
Scale: 1/4" = 1'-0"



4 Type A1 - Plan
Scale: 1/4" = 1'-0"

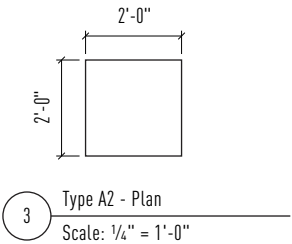
TRANSIT CENTER IDENTIFICATION: A2 LARGE VERTICAL

A2 Large Vertical Transit Identification should be located at a hub where vehicles are the primary form of transportation to access the hub entrance. This sign should not be a visual obstruction and should be used at hubs with less available property.



1 Type A2 - Front Elevation
Scale: 1/4" = 1'-0"

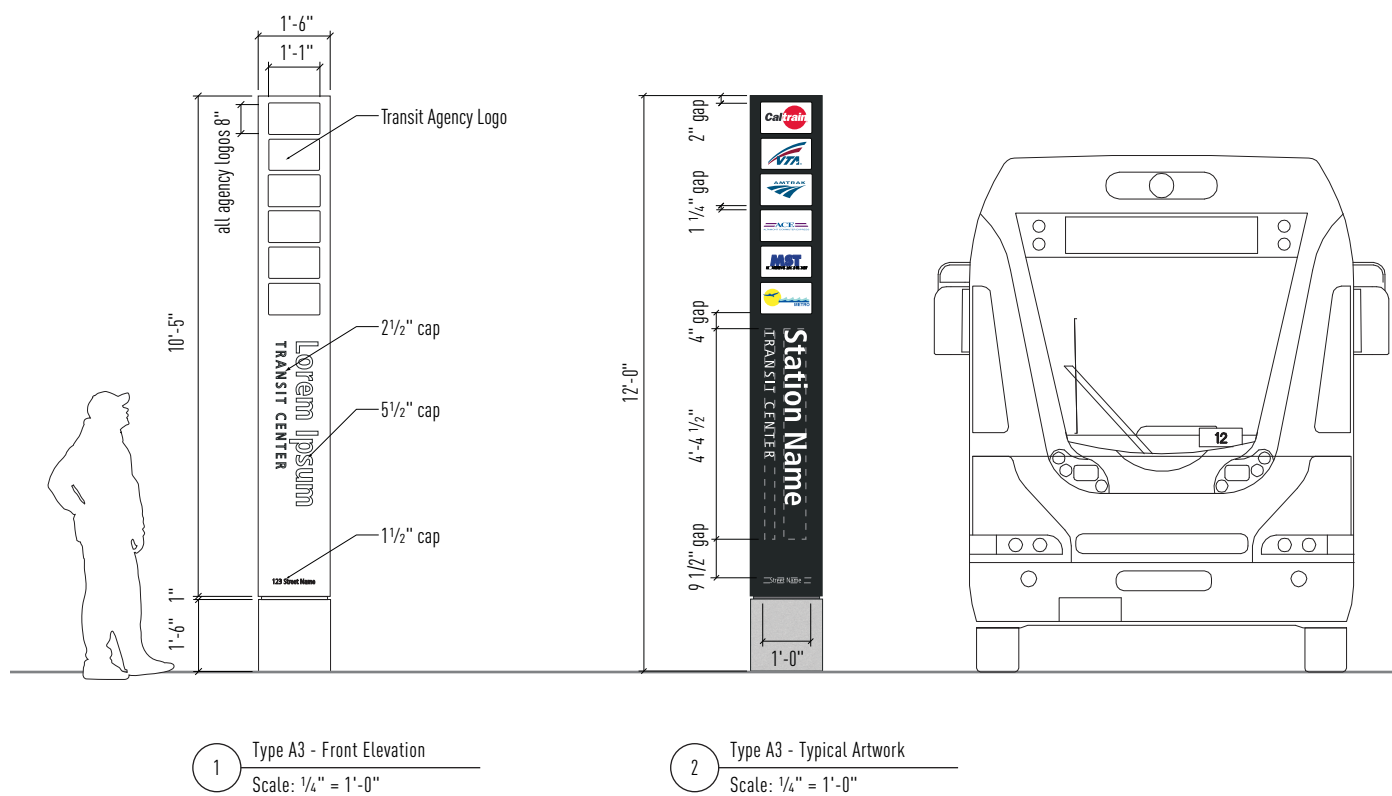
2 Type A2 - Typical Artwork
Scale: 1/4" = 1'-0"



3 Type A2 - Plan
Scale: 1/4" = 1'-0"

TRANSIT CENTER IDENTIFICATION: A3 SMALL VERTICAL

A3 Small Vertical Transit Identification should be located at a hub where cyclists and pedestrians are the primary form of transportation to access the hub entrance. This sign should not be a visual obstruction and should be used at hubs with less available property.



TRANSIT CENTER IDENTIFICATION: A4 LOCATION SPECIFIC

A4 Location Specific Transit Identification should be located at a hub when options A1-A3 will not work at the hub location. This sign should not be a visual obstruction and should be used at hubs with walls or more available. No drawing is available since each A4 Transit Center Identification is designed for the specific hub.

2.2 WAYFINDING

WAYFINDING DIRECTIONALS

- A. Signage should be placed between services at major decision points to support wayfinding and connections. Signage shall direct transit users to platforms, bus stops, taxis, parking, bicycle parking, adjacent streets, and exits.



FIG 2.2A
Detail Large Horizontal Transit Connection,
San Francisco @ 4th & King



FIG 2.2B
Large Horizontal Transit Connection, San Francisco @ 4th & King



FIG 2.2C
Small Horizontal Transit Connection,
Mountain View

- B. Specific icons representing each transit mode connecting at the hub shall be used, as well as the icon for static and real-time transit information (orange ‘i’).
- C. Logos for operators should be used when there is more than one operator providing the same mode, and they are located in different sections of the hub to clearly indicate the path to that operator’s service.
- D. Current signage has white text on black background. Operators may adopt these sign and typeface colors or implement agency standards.

EXIT IDENTIFICATION



FIG 2.2D
Vertical Transit Connection, Palo Alto

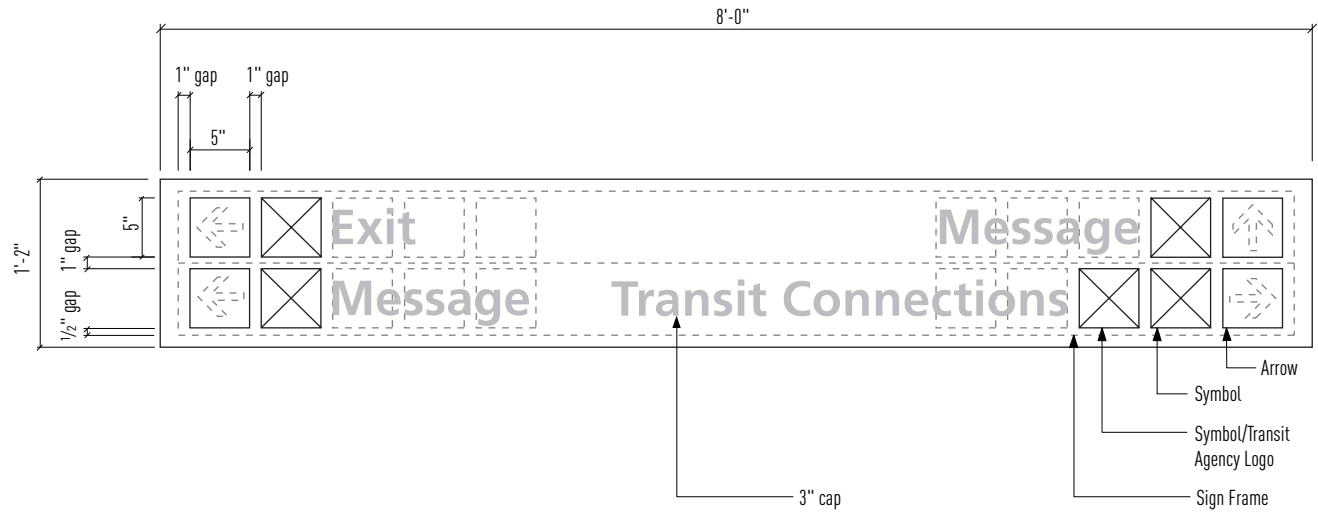
- A. Signage will be placed at all exits.
- B. All Exits are represented by both the exit pictogram (pg. 60) and text, either “EXIT” or “Exit.” “EXIT” is used on signs that are adjacent to an exit and provide the last wayfinding direction through the exit. “Exit” is used when sign is not adjacent to exit, and is providing direction to reach a nearby exit.
- C. A specific number/letter naming convention with street names shall denote each individual exit with a unique identifier. This will be mirrored on Station and Transit Stop maps to clearly and consistently facilitate wayfinding. Care should be taken that the letters or numbers used will not be easily confused with transit route designations at the hub.
- D. Exit identification signage shall have white text on green background.
- E. If the station is located outdoors, street names will replace the exit message to help orient and direct transit users. (Fig. 2.2D)

PEDESTRIAN WAYFINDING: C1/C2

Suspended and wall-mounted wayfinding should be located throughout a hub at key decision points. These signs should be used when a hub can provide overhead mounting or ample wall space.



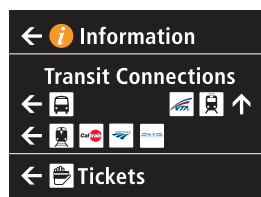
1 Type C1/C2 - Front Elevation
Scale: 1/2" = 1'-0"



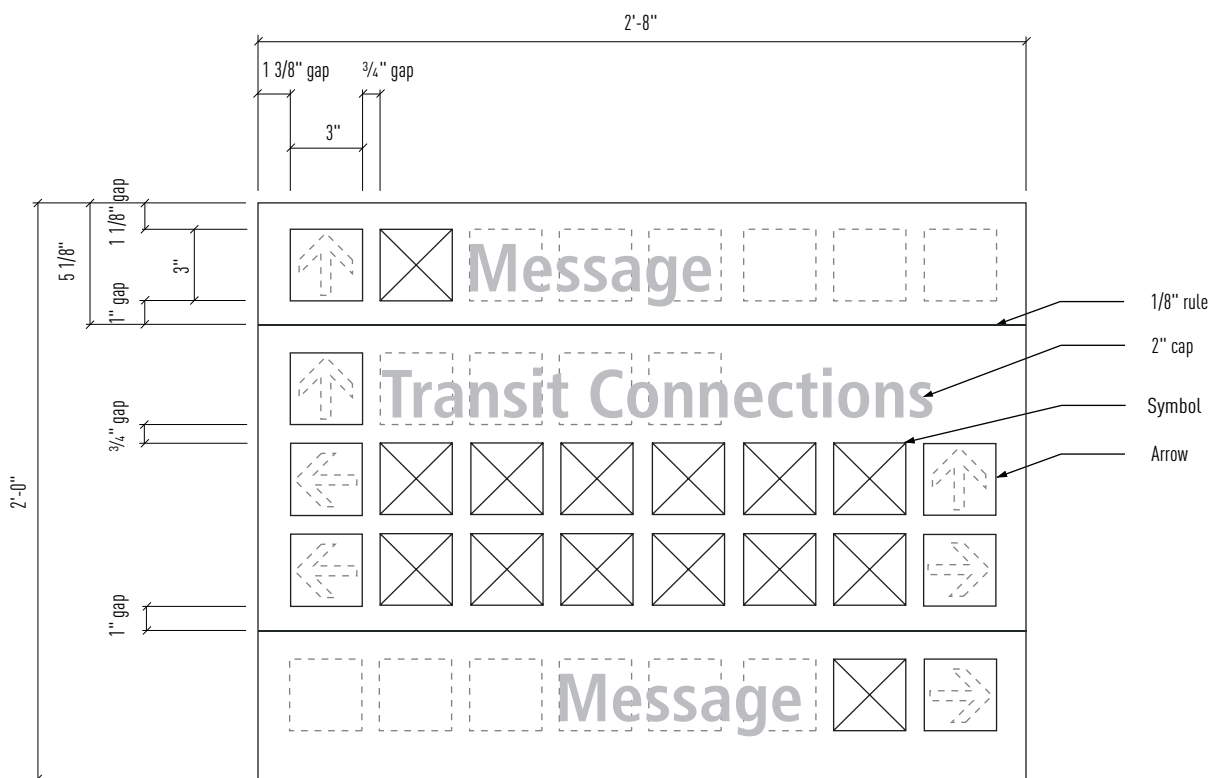
2 Type C1/C2 - Typical Artwork
Scale: 3/4" = 1'-0"

PEDESTRIAN WAYFINDING: C3

Flag-mounted wayfinding should be located throughout a hub at key decision points. The signs should be used when there is limited space for a directional and can be placed on an existing pole. (Fig. 2.2D)



1 Type C3 - Front Elevation
Scale: $\frac{1}{2}" = 1'-0"$



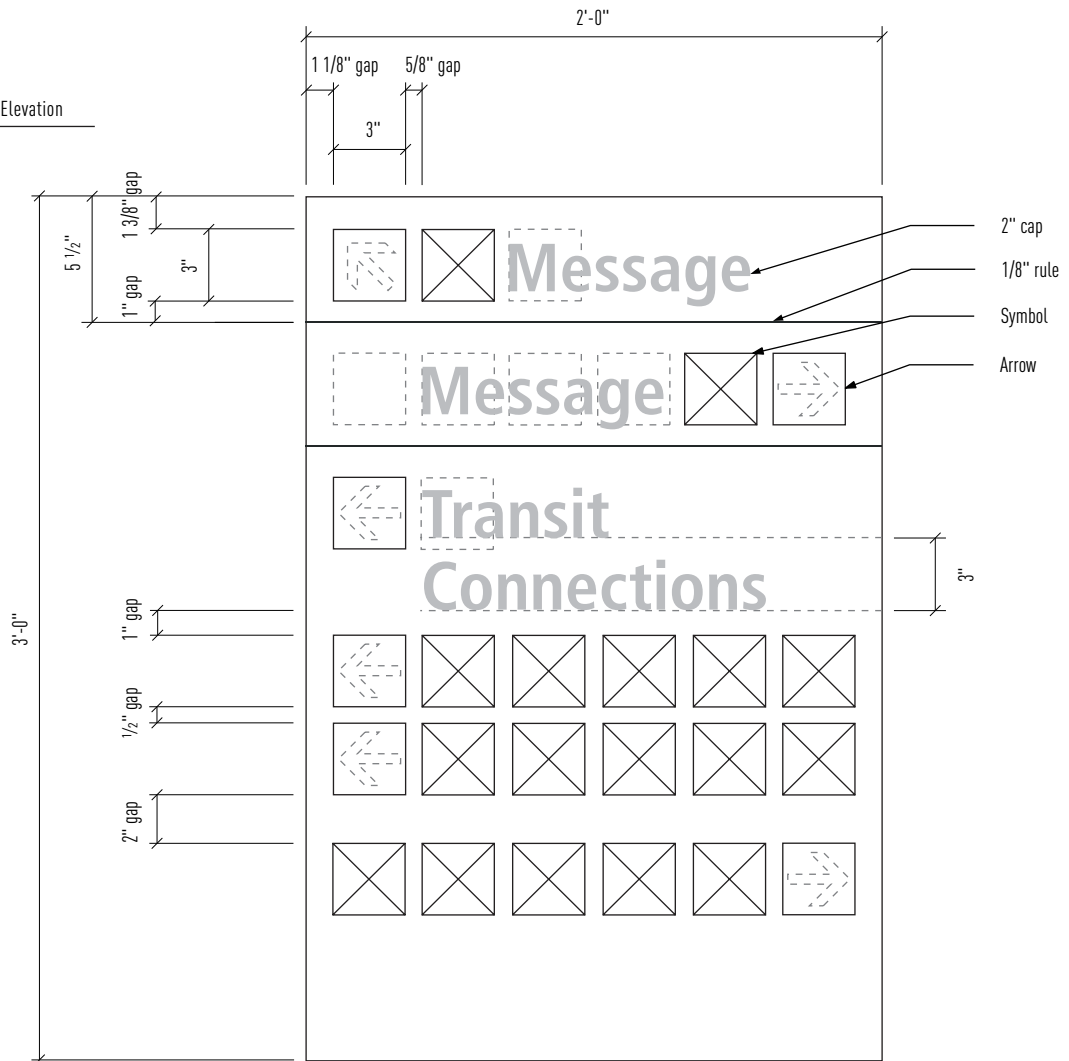
2 Type C3 - Typical Artwork
Scale: $1\frac{1}{2}" = 1'-0"$

PEDESTRIAN WAYFINDING: C4/C5

Vertical pole-mounted and wall-mounted wayfinding should be located throughout a hub at key decision points. These signs should be used instead of C1-3 when there are no existing poles to attach a new sign or space is otherwise limited for a larger directional, such as in a tunnel.



1 Type C4/C5 - Front Elevation
Scale: 1/2" = 1'-0"



2 Type C4/C5 - Typical Artwork
Scale: 1 1/2" = 1'-0"

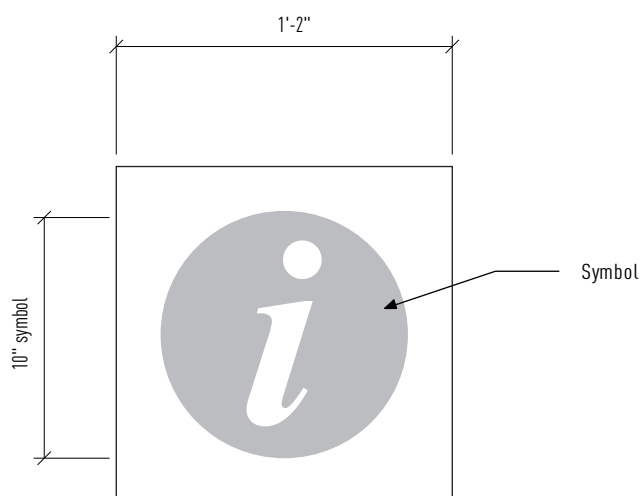
2.3 INFORMATION CUBE

A key element of the hub signage system is the Information Cube, a four-sided overhead cube (or three-sided when wall-mounted) which helps identify where additional transit connection information is located. These cubes are either mounted to a wall or attached to a free-standing Transit Information Display. Refer to the artwork in Appendix A.

INFORMATION CUBE



1 Type I - Front Elevation
Scale: $\frac{1}{2}" = 1'-0"$



2 Type I - Front Elevation
Scale: $1\frac{1}{2}" = 1'-0"$



FIG 2.3A
Information Cube, Fairfield

2.4 WAYFINDING KIOSK

The Wayfinding Kiosk is a freestanding sign that shall be placed on street or at the periphery of the transit hubs. It features a pole-mounted, double-sided kiosk that contains a map with stop and route information to facilitate connecting between transit operators.

The use of the curved kiosk structure is optional and any changes should be discussed with MTC staff in order to approve this or any other alternatives to the Standards as written. The important aspect is the information content.

Each side of the kiosk has four major features:

- Identification Banner (top)
- Wayfinding Messages (middle)
- Map (middle)
- Key Area (bottom)



FIG 2.4A
Wayfinding Kiosk, San Jose Diridon



FIG 2.4B
Wayfinding Kiosk, San Francisco Embarcadero



FIG 2.4C
Wayfinding Kiosk, San Francisco Embarcadero

IDENTIFICATION BANNER

The Identification Banner shall be affixed onto kiosk as the sole permanent message on the kiosk. Refer to Appendix A for layout of the Identification Banner.

WAYFINDING MESSAGES

Up to 3 wayfinding messages can be displayed in the printed inserts. Arrow conventions are the same as regular wayfinding, although a horizontal white line delineates each message. Messages should be focused more on transit and amenities as one approaches the kiosk en route to the hub, while messages should provide connecting transit, amenities, and key community destinations when leaving.

MAP

The map with its key and logo will be a single standard-sized insert for ease of replication in each setting and ease of replacement within the kiosk housing. Kiosk will be designed to allow this printed insert to be easily swapped out to maintain updated information. The map and key will be consistent with transit information display. Transit Stop Map will also include the station/hub name. Key features include:

- A. Icon- and logo-based maps that generally oriented to the north, and have a north arrow.
- B. Consistently use “You Are Here” icon and a walking radius (based on 1/8 mile distance increments) on all maps. The scale of the map may require a different size radius. In all cases, the distance should be measured both in feet and time.
- C. Representation of each transit operator by a unique color, consistent with their logo to the extent possible.
- D. Clearly marked boarding areas for transit type, particular operator and route serving the location. Station and Stop maps will show the direction of travel.
- E. Station exits will be identified, when appropriate, by a number/letter or street name convention on the map. Exit identification number/letters shall be selected which do not resemble route designations used by any agency at the hub.

- F. The map will convey key local destinations to assist with ‘last mile’ wayfinding at the end of a transit trip.
- G. The kiosk may use any combination of the three maps, as appropriate.

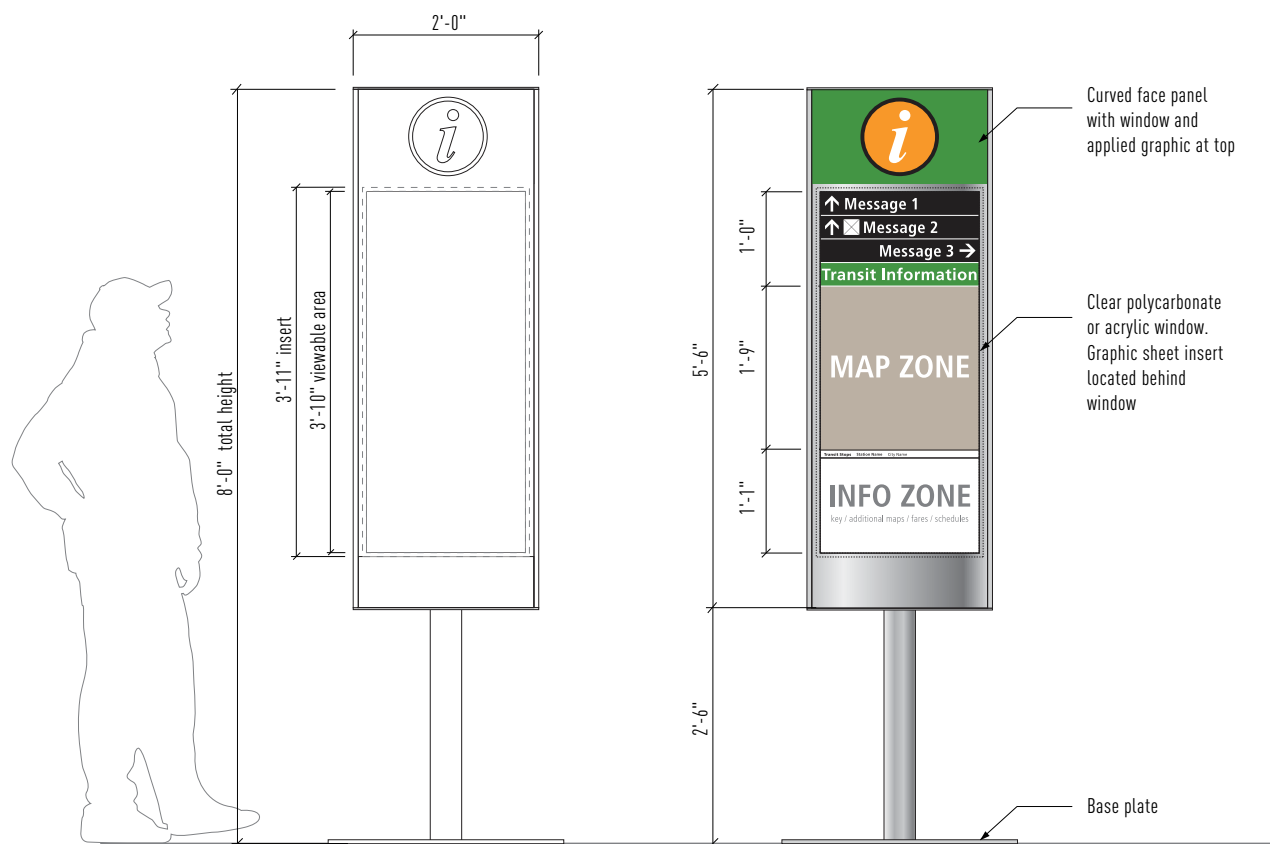
KEY AREA

- A. The key will list the logos of transit operators, icons for the types of transit service provided, and other important icons (such as “You Are Here”) and distance/time radius accompanied by simple text to help the user interpret the map. Icons in the key shall be ordered top-down as follows:
 - “You Are Here” icon
 - “1,000-Foot Radius (five minute walk)” icon (The scale of the map may require a different size radius. In all cases, the distance should be measured both in feet and time.)
 - Radius is measured in feet, meters and in time (minutes)
 - Modal icons (hub stakeholders to determine modal order)
 - All other icons (hub stakeholders to determine order)
- B. As space permits, route names and destinations may be displayed in the key. Hub stakeholders will determine the order in which transit agency routes are listed; however, local service and ridership levels are priority factors in this determination.
- C. The 511 logo will be at the bottom of the key with information about how to get transit information via 511 and 511.org.
- D. At MTC-designated hubs, a point of contact will be identified at the bottom of the key using the text, “Sponsored by the Metropolitan Transportation Commission. Contact us at SignComments@mtc.ca.gov or (510) 817-5900 with feedback on this sign.”

WAYFINDING KIOSK: GENERAL



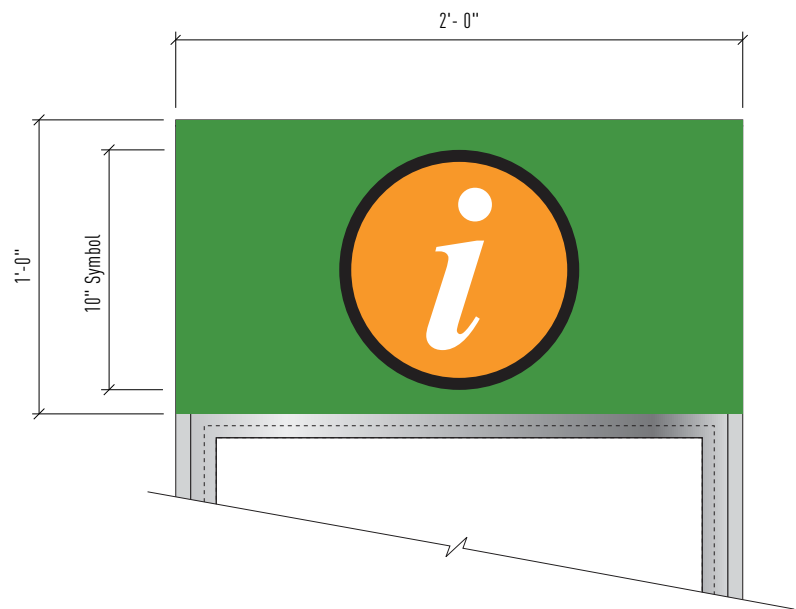
1 Type K - Plan
Scale: 1/2" = 1'-0"



2 Type K - Front Elevation
Scale: 1/2" = 1'-0"

3 Type K - Typical Artwork
Scale: 1/2" = 1'-0"

WAYFINDING KIOSK: IDENTIFICATION BANNER

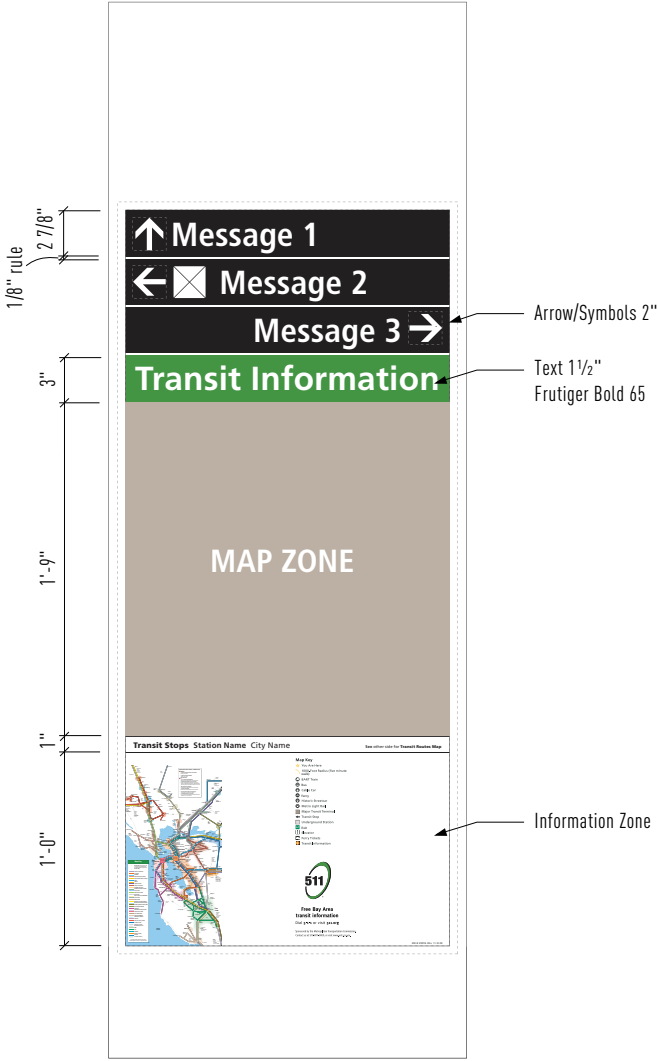


1 Type K - Artwork Detail
Scale: 1½" = 1'-0"

WAYFINDING KIOSK: WAYFINDING MESSAGES, MAP AND KEY



1 Type K - Artwork Example
Scale: 1/2" = 1'-0"



2 Type K - Typical Artwork
Scale: 1" = 1'-0"



FIG 2.5A
Transit Information Displays, San Francisco @ 4th & King

2.5 TRANSIT INFORMATION DISPLAY (TID)

GENERAL

- A. Hub/station name are represented on each map to help orient transit riders to their surroundings.
- B. Each of the four cases has a title identifying the type of information displayed.
- C. All maps and information use a consistent regional design and icon elements.
- D. The 511 logo, located at the bottom of the key, contains information about how to get transit connections information via 511 and 511.org.

- E. At MTC-designated hubs, a point of contact will be identified at the bottom of the key using the text, “Sponsored by the Metropolitan Transportation Commission. Contact us at SignComments@mtc.ca.gov or (510) 817-5900 with feedback on this sign.”
- F. For details regarding each TID see Appendix A.



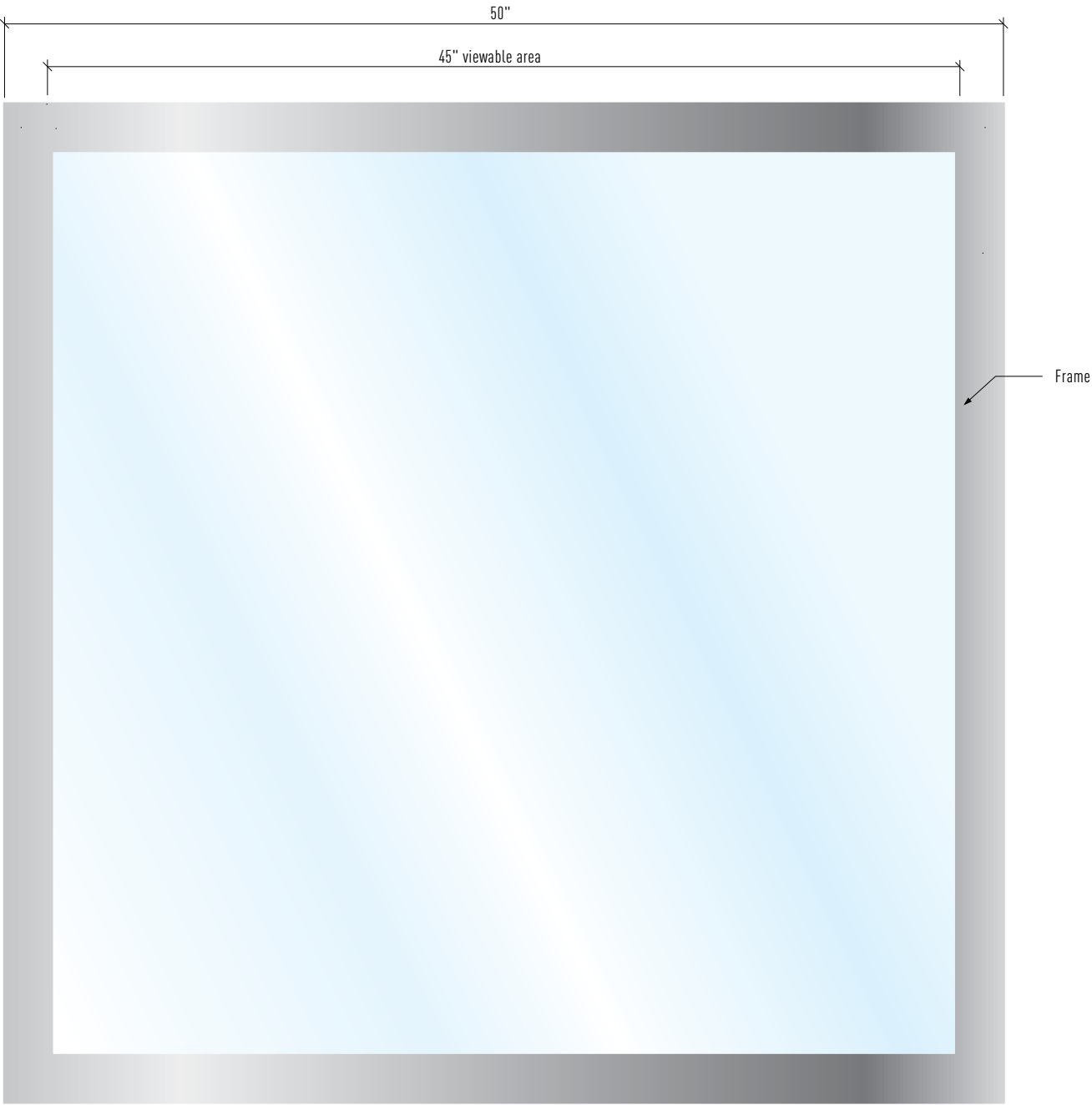
FIG 2.5B
Transit Information Displays, San Francisco Temporary Transbay Terminal



FIG 2.5C
Transit Information Displays, Mountain View

TRANSIT INFORMATION DISPLAY (TID): GENERAL

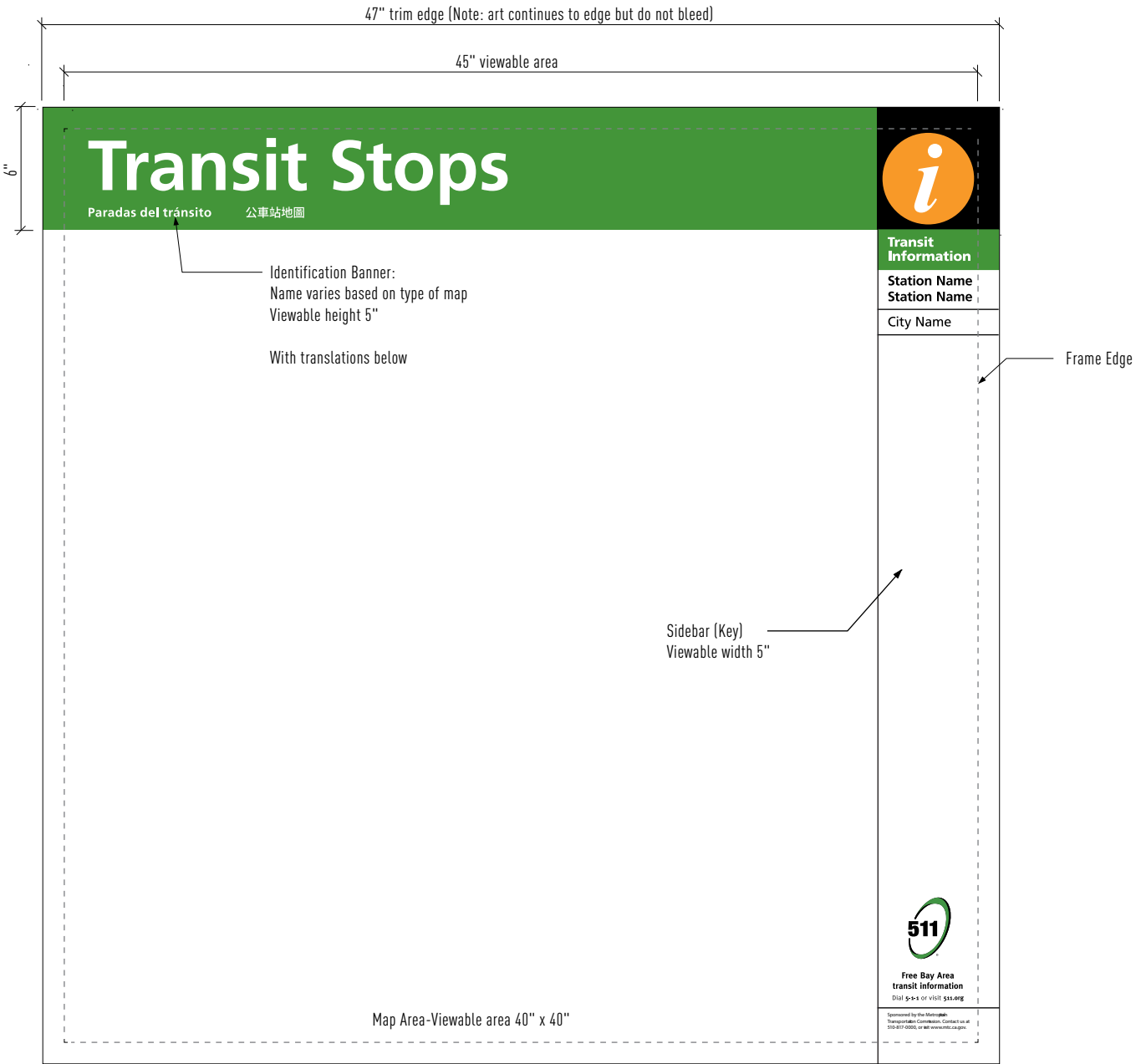
TID display case size.



1 Type T - Front Elevation
Scale: 1 1/2" = 1'-0"

TRANSIT INFORMATION DISPLAY (TID): GENERAL MAP INSERT

TID map insert size.



1 Type T - Typical Artwork
Scale: 1 1/2" = 1'-0"

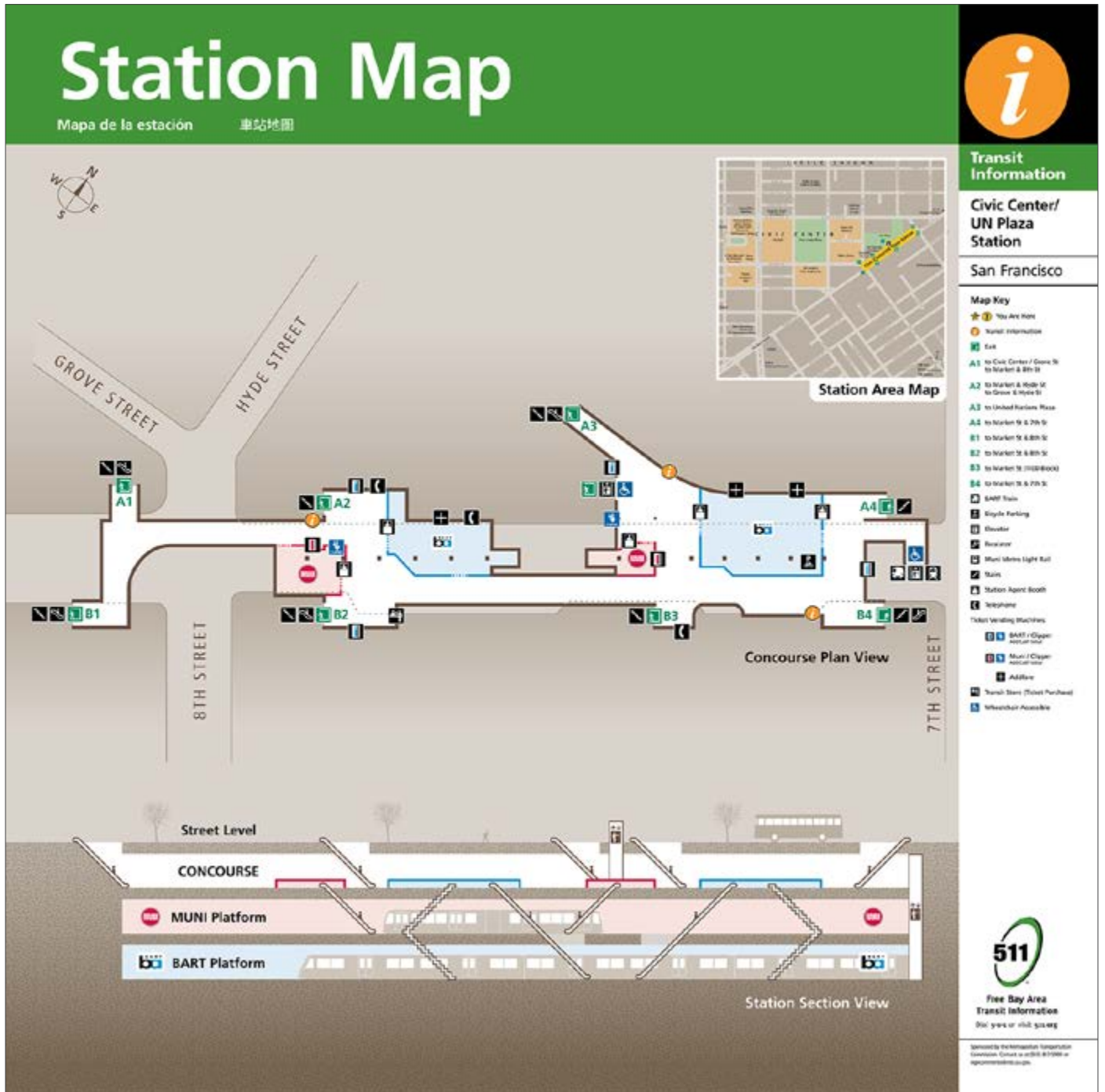
STATION MAP

- A. The Station Map case will feature a single map detailing the layout of the transit hub. In addition, an inset map of the general area will be inserted to provide context.
- B. The map and key may be customized on a hub-by-hub basis by the lead transit operator and the other transit stakeholders as long as the regional standard is met and subject to MTC agreement.
- C. The map will have a key on the right hand side containing logos of transit operators and icons to identify features and services within the hub (such as the location of TIDs and real-time transit information signs). Icons will have explanatory text to help clearly convey their message.
- D. Station maps shall be generally oriented north and a consistent “You Are Here” icon will point in the direction a person is facing.
- E. Boarding areas for transit will be clearly marked as well as the particular operator, mode, route designation, and direction of travel.
- F. Streets, pedestrian routes and bicycle routes immediately adjacent to the station will be identified on the map.
- G. Station exits will be identified by a number/letter convention on map (and reinforced in directional signs). For simple surface-level hubs, exits shall be named with name of adjacent street or other identifier, with no number/letter.
- H. Information to any bicycle facilities within the station shall be provided using the appropriate icons.

TID: STATION MAP

Artwork example for Station Map.

For more detailed artwork please see Appendix A.



TRANSIT STOPS MAP

- A. The map will feature the locations of bus, ferry, streetcar, and rail boarding areas in and around the hub for each transit operator serving the hub.
- B. The map and key may be customized on a hub-by-hub basis by the lead transit operator and the other transit stakeholders as long as the regional standard is met and subject to MTC agreement.
- C. The map will have a key on the right hand side containing icons to identify features and services around the hub. Icons will have explanatory text to help clearly convey their message. Route destinations will be included in key. The priority for listing icons and routes should follow guidance in Appendix A.
- D. Maps will be generally oriented to the north and have a north arrow and “You Are Here” icon
- E. Boarding areas for transit should be clearly marked as well as the particular operator, mode, route, destination, and direction of travel.
- F. Key destinations in the area depicted by the map will be noted.
- G. Station exits will be identified by a number /letter convention on map (and reinforced in directional signs).
- H. In some instances the Transit Station Map and Transit Stops map can be combined, resulting in only three TID panels.

Artwork example for Transit Stops Map.
For more detailed artwork please see Appendix A.



TRANSIT ROUTES MAP

- A. The Transit Route Map case will feature a single map detailing the routes of each transit operator serving the hub. Certain commuter, express, special event, or all-night routes may not be shown if the map will be too cluttered by the additional information, and therefore more difficult to read/comprehend. A footnote in the key will express this.
- B. The map and key may be customized on a hub-by-hub basis by the lead transit operator and the other transit stakeholders as long as the regional standard is met and subject to MTC agreement. The priority for listing routes should follow guidance in Appendix A.
- C. Maps shall be oriented to the north and have a north arrow.
- D. There will be a consistent “You Are Here” icon on all maps.
- E. The scale of the Transit Route Map will be determined on a hub-by-hub basis, as the hub is the point of departure for connecting transit that serves an area unique to each hub.
- F. The key will show a single distinct color for each operator’s routes to differentiate one operator from another.
- G. When possible include bicycle routes in map to provide last mile support. On these maps "with Bicycle Routes" should be added to the green header. See Appendix A for more detail.

TID: TRANSIT ROUTES MAP

Artwork example for Transit Routes Map.

For more detailed artwork please see Appendix A.



SCHEDULES & FARES

- A. The Schedule/Fare Information case will feature basic route, schedule and fare information for each transit operator serving the hub as well as special regional transit services like 511 Transit/511 Real-Time Transit Information, Bicycle and Clipper®.
- B. An inset of the Regional Transit Map from the “Getting There On Transit” guide will be inserted to provide context for travel in the region.
- C. Basic information for each of the operators serving the hub shall be generally provided in a tabular format and include:
 - Schedules with times for departure of all vehicles on every route that connects at the transit hub. Exceptions to this will be for agencies which will utilize frequency tables and which will provide its own schedules in cases. The format will be structured for ease of maintenance.
 - Agency Description and website (when requested)
 - Operating hours
 - Basic fare information
 - Customer service phone number
- D. MTC will be responsible for identifying information that is regional in nature and crafting the message that will be generally located on the right hand side of the printout such as the following:
 - Directions to use 511 Transit to call a specific transit operator, get real-time transit arrival information, connect via 511.org., and to get information about bicycles on transit;
 - Clipper® information
 - Owl Service general reference
 - Regional Bicycle information reference


TID: SCHEDULE & FARES

Artwork example for Transit Schedule & Fares Information.

For more detailed artwork please see Appendix A.

Schedules & Fares

Horario y precios del tránsito 時刻表と車費




Transit Information

Civic Center/ UN Plaza Station

San Francisco

Regional Transit Map



BART

San Francisco Bay Area Rapid Transit (BART) is the first and only transit system in the San Francisco Bay Area that provides service to the entire region. BART is a rapid transit system that provides service to the entire region. BART is a rapid transit system that provides service to the entire region.

Fare Information: BART fares are based on the distance traveled. The fare for a one-way trip from San Francisco to Fremont is \$4.00. The fare for a round-trip trip from San Francisco to Fremont is \$7.00.

Schedule Information: BART trains run from 5:00 a.m. to 12:00 a.m. on weekdays. On weekends and holidays, BART trains run from 7:00 a.m. to 12:00 a.m.

Golden Gate Transit

Golden Gate Transit provides service to the San Francisco Peninsula. Golden Gate Transit provides service to the San Francisco Peninsula. Golden Gate Transit provides service to the San Francisco Peninsula.

Fare Information: Golden Gate Transit fares are based on the distance traveled. The fare for a one-way trip from San Francisco to Sausalito is \$2.00. The fare for a round-trip trip from San Francisco to Sausalito is \$3.50.

Schedule Information: Golden Gate Transit trains run from 6:00 a.m. to 10:00 p.m. on weekdays. On weekends and holidays, Golden Gate Transit trains run from 7:00 a.m. to 10:00 p.m.

AC Transit

Alameda-Contra Costa Transit District (AC Transit) provides service to the Alameda-Contra Costa region. AC Transit provides service to the Alameda-Contra Costa region. AC Transit provides service to the Alameda-Contra Costa region.

Fare Information: AC Transit fares are based on the distance traveled. The fare for a one-way trip from San Francisco to Fremont is \$4.00. The fare for a round-trip trip from San Francisco to Fremont is \$7.00.

Schedule Information: AC Transit trains run from 5:00 a.m. to 12:00 a.m. on weekdays. On weekends and holidays, AC Transit trains run from 7:00 a.m. to 12:00 a.m.

Muni

Municipal Transportation Agency (Muni) provides service to the San Francisco city center. Muni provides service to the San Francisco city center. Muni provides service to the San Francisco city center.

Fare Information: Muni fares are based on the distance traveled. The fare for a one-way trip from San Francisco to San Francisco is \$2.00. The fare for a round-trip trip from San Francisco to San Francisco is \$3.50.

Schedule Information: Muni trains run from 5:00 a.m. to 12:00 a.m. on weekdays. On weekends and holidays, Muni trains run from 7:00 a.m. to 12:00 a.m.

SamTrans

San Mateo Transit Agency (SamTrans) provides service to the San Mateo region. SamTrans provides service to the San Mateo region. SamTrans provides service to the San Mateo region.

Fare Information: SamTrans fares are based on the distance traveled. The fare for a one-way trip from San Francisco to San Francisco is \$2.00. The fare for a round-trip trip from San Francisco to San Francisco is \$3.50.

Schedule Information: SamTrans trains run from 5:00 a.m. to 12:00 a.m. on weekdays. On weekends and holidays, SamTrans trains run from 7:00 a.m. to 12:00 a.m.

Bay Area Rapid Transit (BART)

Bay Area Rapid Transit (BART) provides service to the San Francisco Bay Area. BART provides service to the San Francisco Bay Area. BART provides service to the San Francisco Bay Area.

Fare Information: BART fares are based on the distance traveled. The fare for a one-way trip from San Francisco to Fremont is \$4.00. The fare for a round-trip trip from San Francisco to Fremont is \$7.00.

Schedule Information: BART trains run from 5:00 a.m. to 12:00 a.m. on weekdays. On weekends and holidays, BART trains run from 7:00 a.m. to 12:00 a.m.

Golden Gate Transit

Golden Gate Transit provides service to the San Francisco Peninsula. Golden Gate Transit provides service to the San Francisco Peninsula. Golden Gate Transit provides service to the San Francisco Peninsula.

Fare Information: Golden Gate Transit fares are based on the distance traveled. The fare for a one-way trip from San Francisco to Sausalito is \$2.00. The fare for a round-trip trip from San Francisco to Sausalito is \$3.50.

Schedule Information: Golden Gate Transit trains run from 6:00 a.m. to 10:00 p.m. on weekdays. On weekends and holidays, Golden Gate Transit trains run from 7:00 a.m. to 10:00 p.m.

AC Transit

Alameda-Contra Costa Transit District (AC Transit) provides service to the Alameda-Contra Costa region. AC Transit provides service to the Alameda-Contra Costa region. AC Transit provides service to the Alameda-Contra Costa region.

Fare Information: AC Transit fares are based on the distance traveled. The fare for a one-way trip from San Francisco to Fremont is \$4.00. The fare for a round-trip trip from San Francisco to Fremont is \$7.00.

Schedule Information: AC Transit trains run from 5:00 a.m. to 12:00 a.m. on weekdays. On weekends and holidays, AC Transit trains run from 7:00 a.m. to 12:00 a.m.

Muni

Municipal Transportation Agency (Muni) provides service to the San Francisco city center. Muni provides service to the San Francisco city center. Muni provides service to the San Francisco city center.

Fare Information: Muni fares are based on the distance traveled. The fare for a one-way trip from San Francisco to San Francisco is \$2.00. The fare for a round-trip trip from San Francisco to San Francisco is \$3.50.

Schedule Information: Muni trains run from 5:00 a.m. to 12:00 a.m. on weekdays. On weekends and holidays, Muni trains run from 7:00 a.m. to 12:00 a.m.

SamTrans

San Mateo Transit Agency (SamTrans) provides service to the San Mateo region. SamTrans provides service to the San Mateo region. SamTrans provides service to the San Mateo region.

Fare Information: SamTrans fares are based on the distance traveled. The fare for a one-way trip from San Francisco to San Francisco is \$2.00. The fare for a round-trip trip from San Francisco to San Francisco is \$3.50.

Schedule Information: SamTrans trains run from 5:00 a.m. to 12:00 a.m. on weekdays. On weekends and holidays, SamTrans trains run from 7:00 a.m. to 12:00 a.m.

Bay Area Rapid Transit (BART)

Bay Area Rapid Transit (BART) provides service to the San Francisco Bay Area. BART provides service to the San Francisco Bay Area. BART provides service to the San Francisco Bay Area.

Fare Information: BART fares are based on the distance traveled. The fare for a one-way trip from San Francisco to Fremont is \$4.00. The fare for a round-trip trip from San Francisco to Fremont is \$7.00.

Schedule Information: BART trains run from 5:00 a.m. to 12:00 a.m. on weekdays. On weekends and holidays, BART trains run from 7:00 a.m. to 12:00 a.m.



FIG 2.6A
Wall Mounted Real-Time,
Civic Center/UN Plaza Station, San Francisco



FIG 2.6B
Real-Time Located above a TID,
Transbay Terminal, San Francisco

2.6 REAL-TIME INFORMATION DISPLAY SYSTEMS

- A. Multi-agency real-time transit information signs shall follow specifications outlined in Regional Real-Time Signs Physical Requirements and Specification (See Appendix D).
- B. For each transit hub, the Regional Real-Time Program develops and maintains a web page depicting real-time departure information for multi-agency routes. The web page is broadcast to transit riders via real-time displays. This ensures a consistent look and feel to the information across all hubs.
- C. At each transit hub, the location of large format, multi-agency real-time displays are determined as part of the Concept Plan and Design/PS&E phases of the Hub Signage Program, which is MTC's effort to improve signage at regional transit hubs.
- D. Any large format, multi-agency signs installed in the field as of September 24, 2008 are grand-fathered in to this requirement, and will have to meet the regional standard upon replacement of the sign.

- E. Real-time displays shall be located adjacent to TIDs either attached to the wall above TIDs or to the freestanding TIDs structure itself when used. In some instances, real-time displays are ceiling mounted.

REAL-TIME INFORMATION DISPLAY SYSTEMS

Display artwork is designed within requirements of the electronic medium. The Regional Transit Hub Standards and Guidelines can be found at the following address: <http://www.mtc.ca.gov/planning/tcip/>

For more detailed information please see Appendix D.

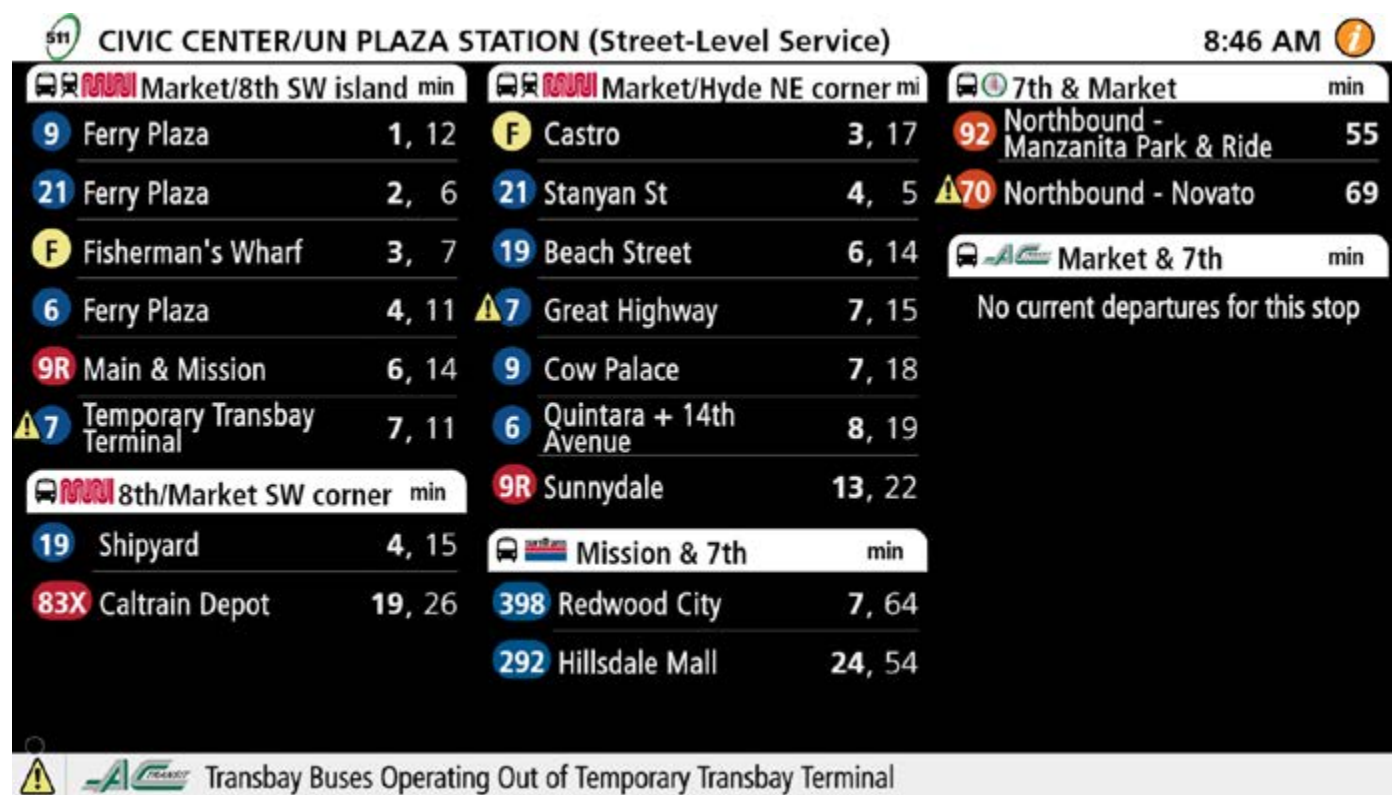


FIG 2.6C
Real-Time Information Display,
Example only: not to be used as artwork

3

SIGN PLACEMENT

Wayfinding is defined as the process which allows people to determine their location, determine their destination, and develop and follow a plan that will help take them from their location to their destination. The following are recommended sign design and placement principles for transit hub wayfinding, including principles regarding spacing and sequencing of signage.

3.1 WAYFINDING DESIGN PRINCIPLES

- A. Develop wayfinding as an integral part of the architecture and site design.
- B. Trip Segments and Decision Points: Spatial planning should include analysis of the series of trip segments that an individual must take within a transit hub and to nearby destinations. Understanding these segments (which compose the circulation system of the hub) serves as a framework for identifying decision points and, ultimately, for locating wayfinding signage at the transit hub. Decision points are locations where an individual wayfinding decisions like locating entrances and exits, specific transit stops or platforms, and major destinations within and neighboring the hub.
 - Directional signage should be installed with care at “decision points” or intersections. Information should be perceived at or shortly before a decision point otherwise it might not be noticed. Take into consideration lighting levels and density of people using facility in establishing acceptable locations for signage in relation with decision points. Special care should be taken with two-sided signs to be certain that the message is delivered at the appropriate decision for both messages.
 - Provide wayfinding message appropriate level of detail and specificity for the necessary decisions, for example, “early” signage directing customers to connecting bus stops may state “Transit Connections”, and signage closer to stops would then orient customers to which side of the street is connected with which routes and destinations.

- Design wayfinding recognizing that decision points vary among customers, e.g. some customers need to find wheel-chair access ramps and others want to find bicycle lanes.
 - In locations that have long segments between decision points additional wayfinding signage may be necessary to reassure transit users that they are on the correct route.
- C. Provide continuous wayfinding leading from the local community to transit and back to local destinations.
- D. Wayfinding addresses needs of a number of groups, including the first time and infrequent transit users, non-English speakers, foreign visitors, the elderly, and the physically and mentally impaired. These potential customers travel to and from the transit hub by various modes of transportation.
- E. Future transit hubs should be designed to accommodate wayfinding to support all transit users.
- Design the wayfinding with the use of universal design principles.
 - Design the site and transit hub with the clarity of wayfinding in mind. Example of a design may include the following: make hubs recognizable within the urban fabric (recognizable image); make entries prominent and easily accessed; make transit hubs visible from nearby adjacent streets and other populated areas; arrange paths within hub so that next destinations within hub are visible whenever possible, and arrange stops within the hub so that direction of transit service is apparent.
 - When possible keep transit hub compact to minimize walking distances between transit stops and platforms, to aid clarity of wayfinding, and to increase convenience and security. Wayfinding is an important tool, but it must work hand in hand with good station design.

3.2 SIGN PLACEMENT PRINCIPLES

- A. Locate signage and information displays for readability and prominence. Height shall be proportionate to viewing distance. Refer to TCRP Report 12.
- B. Position signs for legibility, but locate signs where sign and customers reading sign will not obstruct traffic.
- C. Signage should be located where most effective in regard to decision points and other information needs. Existing signage shall be reviewed and, when necessary, modified or removed so that it acts in concert, not conflict, with transit connectivity wayfinding.
- D. Avoid over-signing in any area. Over-signing is when an area has too many signs as seen from a particular vantage point so that the transit user may become distracted and confused. Signs which can contribute to over-signing include concessionaire signage, advertisements, and even wayfinding, operator identification, and regulatory signs.
 - Prioritize signage as seen from each vantage point (particularly decision points) so that wayfinding signage is prominent and not lost among other messages.
 - To avoid the appearance of over-signing, consider organizing concessionaire and advertising signage into particular areas or zones and uniform formats.
 - To eliminate repetitive or confusing information, existing wayfinding signs should be completely removed when replaced with new wayfinding signage, such as the hub signage wayfinding.

4

SIGN FORMAT & DESIGN

Where a Transit Information Banner is indicated to be incorporated in a sign type or element, its background color shall be the “banner green”. The Banner will feature the heading “Transit Information” in white. The Banner will feature a white “i” in a round field of “icon orange”. Refer to “Colors Used in MTC Signage System” for illustration and specifications for colors.

4.1 PICTOGRAMS AND LOGOS

INTERNATIONAL PICTOGRAMS

A pictogram is a symbolic presentation of information through pictures. Pictograms visually represent the objects to which they refer and attempt to bridge language barriers. Pictograms have the advantage of being concise and rapidly perceived. Depending on their familiarity, pictograms may require text augmenting their message. Use of pictograms, as required under these criteria, conforms to national and international conventions as adapted for local needs.

TRANSIT INFORMATION LOGO AND BANNER

The Transit Information logo should be used solely to indicate that information can be found at specific location. In the case of Kiosk, the logo is set in a banner. Refer to the connectivity logos for the color and layout of the transit information, alone and in a banner setting.

OPERATOR LOGOS, MTC-ADOPTED PICTOGRAMS AND ARROWS

See Signing Conventions herein for illustrations of operator logos, MTC-adopted pictograms, and arrows. Additional pictograms may be used subject to MTC approval.

- A. Integrate pictograms and other signage elements into signage in a consistent manner.
- B. Utilize arrows in accordance with arrow convention.
- C. Install signs with arrows to help ensure unambiguous direction.
- D. Utilize logos of various transit operators to facilitate wayfinding between systems and to help identify station area as a transit hub.
- E. Utilize text with pictograms and icons, as necessary, to better convey message.

ORDER OF MTC-ADOPTED PICTOGRAMS AND ICONS

Typically, modal pictograms are the primary information on a directional sign and should lead. The following lists indicate the order in which pictograms and icons shall be arranged. Note: the order of pictograms and icons may be adjusted to suit field conditions. For example, pictograms indicating exits, stairs, and elevators may take precedence on some signs.

- A. Information–Transit “i”
- B. Transit Operators (modal)
 - Rail (urban/heavy-commuter/light/streetcar/cable car)
 - Ferry
 - Bus (BRT/by order of Level of Service (LOS) provided)
 - Shuttles (managed by transit operators)
- C. Other Transportation Providers (Non Transit)
 - Other Shuttles
 - Major Private Services:
 - Airporters/Greyhound (by order of LOS provided)
 - Taxis

D. Bike Parking

- Station
- Rack
- Lockers (order reversed with rack, if lockers are available to those without prior reservations)

4.2 SIGN CONVENTIONS

OVERVIEW

- The following conventions are mandatory for use in MTC-approved transit hub wayfinding, as applicable.
- Table shows official operator color standards. Transit mode icons used on map TIDs are differentiated using these colors. Where more than one color is shown for a particular agency, use the first color listed.

MTC ADOPTED PICTOGRAMS CONNECTIVITY LOGOS



Transit Connectivity Logo
Orange: Pantone 151 C



**Transit Connectivity Logo for
Banner and Kiosk**
Orange: Pantone 151 C
Black: Pantone Process Black C
Green: Pantone 363 C



**Transit Connectivity Logo for
TID map**
Orange: Pantone 151 C
Black: Pantone Process Black C

CONNECTIVITY LOGOS CONT.



511.org

Green: Pantone 363C

Black: Pantone Process Black C



511.org with tag line

Green: Pantone 363C

Black: Pantone Process Black C



Clipper®

Blue: Pantone 7462C



All Nighter

Blue: Pantone 296C

Yellow: Pantone 603C



MTC

Blue: Pantone 540C

Red: Pantone 485C

OPERATOR LOGOS

Logos may have changed, shown logos are current as of August 1, 2019.



ACE Rail

Purple: CMYK 55-100-0-15

Light Purple: CMYK 35-65-0-10

Grey: CMYK 0-10-15-40



AC Transit

Green: Pantone 342C

Black: Pantone Process Black C

Grey: CMYK 0-0-0-40



Amtrak

Blue: Pantone 302C



BART

Blue: Pantone Process Blue C

Black: Pantone Process Black C



Blue & Gold Fleet

Blue: Pantone 287C

Yellow: Pantone 109C



Broadway Shuttle

Green: Pantone 583C

OPERATOR LOGOS CONT.



Caltrain

Red: Pantone 186C

Black: Pantone Process Black C



Capitol Corridor

Dark Blue: CMYK 100-80-0-45

Light Blue: CMYK 50-25-0-5

Yellow: CMYK 0-28-100-0



County Connection

Red: Pantone 1807C



Dumbarton Express

Blue: Pantone 300C

Black: Process Black C



Fairfield and Suisun Transit

Blue: CMYK 100-75-0-0

Green: CMYK 75-0-100-25



Golden Gate Transit (Bus)

Orange: Pantone 173C

Green: Pantone 369C



Golden Gate Ferry

Orange: Pantone 173C

Blue: Pantone 294C



Greyhound

Black: Process Black C



Marguerite (Stanford Shuttle)

Red: Pantone 201C

Green: Pantone 3298C



Marin Transit

Dark Green: Pantone 361C

Light Green: Pantone 367C



Mendocino Transit Authority

Blue: CMYK 95-65-11-1

Green: CMYK 89-33-98-25

Yellow: CMYK 3-0-71-0



Modesto Area Express/MAX

Blue: Pantone 2935C

Red: Pantone 7427C



Monterey-Salinas Transit

Blue: CMYK 100-90-8-1

Black: CMYK 100-100-100-100



Muni

Red: Pantone 200C



Palo Alto Shuttle

Black: Process Black C



Rio Vista Delta Breeze

Coral: CMYK 0-47-29-0

Dark Blue: CMYK 63-12-2-60

Turquoise: CMYK 87-0-38-0

Light Blue: CMYK 42-8-0-40

OPERATOR LOGOS CONT.



SamTrans

Blue: Pantone 287C

Red: Pantone 186C



San Joaquin RTD

Red: CMYK 26-100-78-25

Black: CMYK 0-0-0 -100

Grey: CMYK 0-0-0-40



SF Bay Ferry

Grey: CMYK 49-41-42-5

Green: CMYK 72-9-100-0

Gradient Blues: CMYK 99- 93-6-0

CMYK 85-50-0-0

CMYK 70-16-0-0



Santa Cruz METRO

Dark Blue: CMYK 100-79-0-0

Light Blue: CMYK 38-0-16-0

Yellow: CMYK 0-0-93-0



Santa Rosa CityBus

Black: CMYK 0-0-0-100

Blue: CMYK 93-84-0-0



SolTrans

Yellow: Pantone 7549C

Green: Pantone 363C



Sonoma County Transit

Blue: CMYK 100-85-25-10

Grey: CMYK 50-40-40-10



TRI DELTA TRANSIT

Tri Delta Transit

Blue: CMYK 100-95-23-13

Green: CMYK 90-33-96-25



Union City Transit

Black: Process Black C



VINE Transit

Gradient: Pantone Yellow 012C

Pantone Yellow 3272C

Orange: Pantone 152C



VTA

Dark Blue: Pantone 2945C

Sky Blue: Pantone 298C



WestCAT

Green: CMYK 78-13-100-3



WestCAT Lynx

Blue: CMYK 100-89-31-20



West Marin Stagecoach/The Stage

Blue: Pantone 2935C

Green: Pantone 360C

Light Green: Pantone 129C



Wheels/LAVTA

Blue: Pantone 285C

PRINCIPAL CONNECTIVITY MODAL ICONS OR PICTOGRAMS

Mirror images of the icons below are allowable to help with wayfinding needs. Images are shown black with white icons, but can be reversed for specified wayfinding.



Bus



Cable Car



**Ground
Transportation**



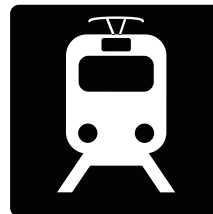
Rail, Airtrain



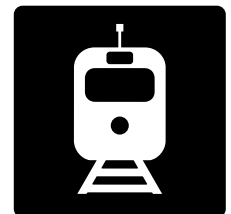
Rail, BART



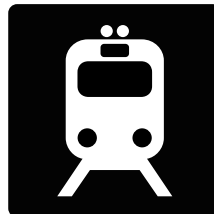
**Rail, Heavy
Intercity/
Commuter**



Rail, Light



**Rail, Light
Historic
Streetcar**



**Rail, VTA train
(VTA-
confirmation
needed)**

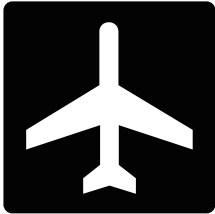


Taxi



**Water
Transportation**

OTHER MODAL
ICONS/PICTOGRAMS



Air
Transportation



Airport with
IATA airport
code (e.g. OAK)



Automobile



Parking



Park-n-Ride



Passenger
Drop off/Pick up



Bay Area
Bike Share



Bicycle Lockers



Bicycle Parking



Bicycle Route



Bicycle Station



Bikeshare



Pedestrian

ACCESS PICTOGRAM



Elevator, 2-Way



Elevator, Down



Elevator, Up



Escalator

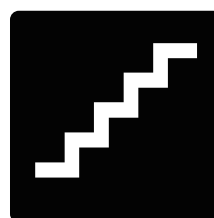
Note: To avoid ambiguity directional arrows can be used with the Elevator and Escalator pictogram



Exit



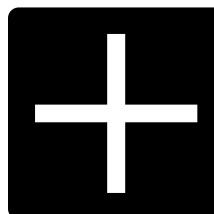
International
Symbol of
Accessibility
(Pantone 300CV)



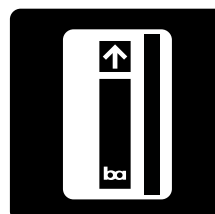
Stairs

AMENITIES AND COMMUNICATIONS PICTOGRAMS

TICKETS



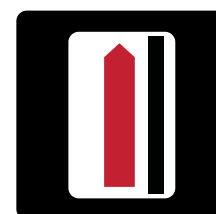
Add Fare



BART Ticket



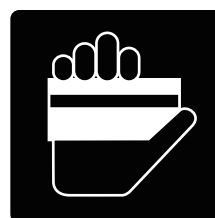
Logo, Clipper®
Pantone 7462C



MUNI Ticket



Ticket Store
(Purchase)



Ticket Vending



Station Agent

AMENITIES AND
COMMUNICATIONS
PICTOGRAMS CONT.

AMENITIES



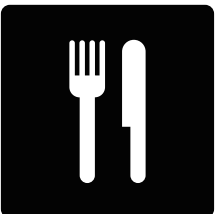
Baggage



Ballpark



Coffee



Food



Logo, East Bay
Regional Parks



Restrooms



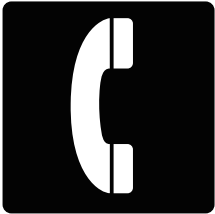
Restroom, Men's



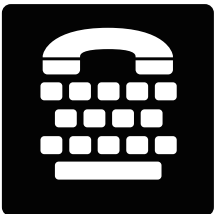
Restroom,
Women's



Shop



Telephone



Text Telephone
(TTY)



Waiting Room

AMENITIES AND COMMUNICATIONS PICTOGRAMS CONT.

NAVIGATION / LOCATION



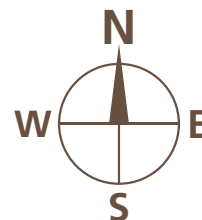
511 Departure Times



You Are Here



You Are Here
(section view)



Compass

HIGHWAY SYMBOLS

All shields Pantone Warm Gray 11



Interstate
(1 and 2 digit)



Interstate
(3 digit)



U.S.
(1 and 2 digit)



U.S.
(3 digit)



CA
(1 and 2 digit)



CA
(3 digit)

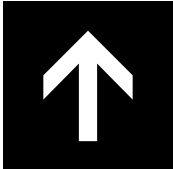
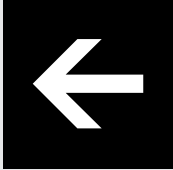
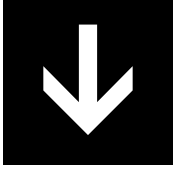
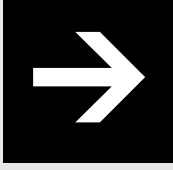


County

DIRECTIONAL ARROWS

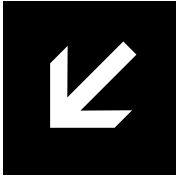
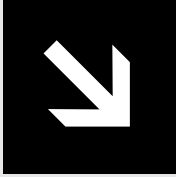


Directional arrows are a critical element in any wayfinding convention. The following section provides the guidance for general deployment of arrows and how to use under specific circumstances:

Each message should be accompanied by only one arrow providing direction. Physically separate messages when more than one the arrow is needed to avoid ambiguity. No signs should have messages presented without separation that are not along the same path of travel as indicated by a single directional arrow.

DIRECTION	PICTOGRAM	USAGE
UP		Use to indicate destination ahead; proceed in a forward direction. May also be used at foot of stairs or escalator to indicate destination on upper level; proceed upward.
LEFT		Destination to the left; turn left at this point; or turn left immediately.
DOWN		Use at head of stairs or escalator to indicate destination on the lower level of a multi-level hub; proceed downward.
RIGHT		Destination to the right; turn right at this point; or turn right immediately.

The following arrows; Arrow Down Left, Arrow Down Right, Arrow Up Left, or Arrow Up Right, shall be used only when it is impractical to locate sign where the Arrow Up, Arrow Left, Arrow Down or Arrow Right would be used. In those instances, the arrows can be used to represent diagonal movement only in situations where there is no grade change. In areas where there are grade changes, these arrows can only be applied to direct users up and down escalators or stairways.

The following arrows should not be used when an escalator or stairway is of a sufficient distance from the sign that a left/right arrow would be appropriate, followed by a down arrow at the escalator or stairway.

DIRECTION	PICTOGRAM	USAGE
DOWN LEFT		Escalator or stairway leading downward which is to the left of the reader.
DOWN RIGHT		Escalator or stairway leading downward which is to the right of the reader.
UP LEFT		Escalator or stairway leading upward which is to the left of the reader. May also be used for destinations that are up ahead but approached at a slant.
UP RIGHT		Escalator or stairway leading upward which is to the right of the reader. May also be used for destinations that are up ahead but approached at a slant.

The following arrows shall be used only when necessary due to indirect path of travel, physical obstructions and limitations to sign placement. These arrows should be used when the previously described arrows will not direct customers to the correct location.

DIRECTION	PICTOGRAM	USAGE
FORWARD LEFT 90°		<p>This arrow is used when the reader's view is obstructed (i.e. walking around a corner, column or building)</p> <p>Escalator or stairway leading downward which is to the left of the reader.</p>
FORWARD RIGHT 90°		<p>This arrow is used when the reader's view is obstructed (i.e. walking around a corner, column or building)</p> <p>Escalator or stairway leading downward which is to the right of the reader.</p>
LEFT 90° FORWARD		<p>Escalator or stairway leading upward which is to the left of the reader.</p>
RIGHT 90° FORWARD		<p>Escalator or stairway leading upward which is to the right of the reader.</p>

ARROW ORDERING CONVENTIONS: MULTI-DIRECTIONAL

Where multiple destinations and directions are shown in a horizontal arrangement, the messages should be organized in order of arrow directions, from left to right, as follows:

- Left Arrow
- Arrow, Up Left
- Up Arrow
- Arrow, Up Right
- Right Arrow

Combining the Down Arrow with any other direction should be avoided; the principle being that vertical access directions should not be combined with same-level directions on the same sign unit. The U-turn Arrow should be avoided if at all possible. It should not be combined with other directions in a multi-message sign.

4.3 MESSAGE CONVENTIONS

NOMENCLATURE

The specific words used to identify features, functions, and destinations in signage should be consistent across all transit hubs and signs.

Prepositions are omitted at the beginning of a message when pointing to the city itself, off in the distance. Example: “Fremont”, not “To Fremont”. Prepositions are not omitted when pointing to a path that will lead a pedestrian in the direction of the city, but does not point to the city itself.

Where applicable, use the phrase “Transit Connections” and include modal icons, and connecting transit operator logos.

For the Exit directional sign the phrasing shall be patterned after the following example: “Exit A1 Market Street.” The example applies a number letter convention following the word “Exit” and the exit icon, with the name or names of adjacent streets inserted following the number letter convention.

Foreign language headers can be inserted into transit information displays to provide clearer direction at those hubs where there is a need for communicating with a large non-English speaking group of transit users. Usage of foreign language headers requires MTC approval.

TYPOGRAPHY

Wayfinding messages shall be set in upper and lower case type or all upper case in accordance with prototype signs and transit information displays included in these criteria. Typefaces shall be Frutiger. Examples of text that is always upper case are transit operator and airport abbreviations such as “AC Transit”, “BART”, and “SFO”. Note that the word “Exit” shall also be in all capital letters where required by code.

ABBREVIATIONS

Use an ampersand “&” instead of “and” when connecting two words which naturally belong together because of similarity of function or geographical proximity. Use of an ampersand is also permitted when space constraints do not allow use of the word “and”. In addition, use an ampersand when it is part of a transit operator name such as “Blue & Gold Fleet”.

Names of destinations shown on signs may also need to be abbreviated due to space constraints (example: “Bay Pt”). Where abbreviation is necessary, it is important that the name be abbreviated the same way each time.

Limit use of abbreviations to the most common and widely understood such as:

ABBREV.	DESCRIPTION	ABBREV.	DESCRIPTION	ABBREV.	DESCRIPTION
N	North	St	Street	Sq	Square
S	South	Ave*	Avenue	Wy	Way
E	East	Bldv	Boulevard	Pkwy	Parkway
W	West	Cir	Circle	Expy	Expressway
		Ct	Court		

* BART standard is Av

PUNCTUATION

Minimize use of punctuation while maintaining clarity of meaning and consistency with good grammatical form.

Use a comma between items in a series and to separate two pieces of information, for example, City Center, City Hall.

Joint station names are shown with a “/”; for example:

Embarcadero/S.F. Ferry Terminal

Multiple line destinations, when combined on a single platform identification sign, are shown with punctuation, for example:

Richmond, Pittsburg/Bay Point, Dublin/Pleasanton, Fremont

4.4 TYPEFACE

Typeface family is Frutiger. Frutiger 65 Bold is the ONLY version approved for wayfinding signage which ADA standards apply. Other versions are prohibited by ADA. Other sign elements such as maps, may use several different weights and italics. Refer below for illustrations.

FRUTIGER 45 LIGHT

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?!&

FRUTIGER 46 LIGHT ITALIC

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?!&

FRUTIGER 47 LIGHT CONDENSED

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?&

FRUTIGER 55 ROMAN

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?&

FRUTIGER 56 ITALIC

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?&

FRUTIGER 57 CONDENSED

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?&

FRUTIGER 65 BOLD

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?&

FRUTIGER 66 BOLD ITALIC

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?!&

FRUTIGER 67 BOLD CONDENSED

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?!&

FRUTIGER 75 BLACK

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?!&

FRUTIGER 76 BLACK ITALIC

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?!&

FRUTIGER 77 BLACK CONDENSED

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?!&

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z
1 2 3 4 5 6 7 8 9 0 . , / - ! ? &

4.5 COLORS




Standard signage illustrated in these criteria shall have the colors shown in Appendix A. Other color schemes will only be considered if the sign has formally been rejected through the permit review process by the jurisdictional authority (such as a city, not a transit agency) and is required to use a different color scheme as the condition of approval. In this case, the replacement color scheme is subject to MTC review and approval.

Minimum contrast between text and background colors shall be 70 percent in accordance with TCRP Report 12.


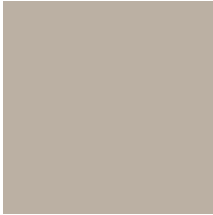
COLORS USED IN MTC SIGNAGE SYSTEM

Note: Color samples depicted in this document are for general identification purposes only. Do not use these color swatches for color matching. Use only manufacturer's official color swatches. Consult fabrication specifications for specific sign types for appropriate materials and finishes.

ACCESSIBILITY / SAFETY COLORS

		
Accessibility Symbol (Federal Standard) 595B Blue #15090 Pantone 300 CV	Safety Green; Exit Symbol/ Exit Panel Background Pantone 3415C	Safety Red; Regulatory/ Safety Symbols Pantone 485C

TID MAP COLORS

		
Map Banner Pantone 363C	Transit Information Icon Pantone 151C	You Are Here/ Walking Radius Pantone 123C
		
Symbol Back- ground/Text White	Pantone Black	Streets Pantone 400C
		
Blocks and Backgrounds Pantone 402C	Buildings Pantone 403C	Street Names/ Outlines Pantone Warm Gray 11C

5

MATERIALS & CONSTRUCTION

The purpose of this section is to provide additional practical information regarding the selection of materials and lessons learned from the construction of various hub signage projects in the San Francisco Bay Region. Attention is also directed to Appendix E for specific examples of projects and their interpretation and implementation of standards consider herein.

5.1 MATERIALS

- A. Typically, non-flammable, permanent, and non-fading. Construct signage of vandal resistant materials.
- B. Select materials and design assemblies which require minimal long-term maintenance. Sign posts and frames should resist corrosion. Sign posts are recommended to be stainless steel. The grade of stainless steel should be selected in consideration of the nearby environment (i.e. higher grade required in salt-water environments near the Bay and ocean). Alternatively, bead-blasted aluminum has been used in some regional deployments.

For a 2-sided kiosk 1/16" Makrolon or Lexar polycarbonate sheets are used and cut to size based on how the kiosks are constructed.

TIDs have glass windows (¼" thick) and ferromagnetic interior back panels. The paper for the signs is typically 10 mil resin-coated, water-resistant paper, and is printed with UV-resistant ink from a large-format inkjet printer. It should have minimal gloss to reduce glare.

5.2 CONSTRUCTION

- A. Build to resist seismic events, wind, moisture, vandalism and for easy repair. Standardize designs, materials, assemblies, and attachment methods within and between hubs.
- B. Construct so that elements can be easily updated, particularly wayfinding kiosks and transit information display panels. Utilize modular construction to the extent possible to permit graphic panels to be removed and replaced as needed. To the extent possible, make operator logos and arrows modular to facilitate easy updates.
- C. Attachment of maps within the transit information display panels should be considered. The maps are typically printed on paper. Magnets and clips have been used. Magnetic attachments require magnetic backing—note that aluminum and some grades of stainless steel are not magnetic. For future adjustments, using very shallow cases where the glass presses up against the paper to hold the paper in place are worth considering, to reduce visible curling and wrinkling.

GLARE AND LIGHTING

- A. Outdoor signs should be placed and oriented to reduce glare from the sun or nearby reflective surfaces (e.g., smooth pavements). Glare can be mitigated with the use of sunshades on the sign, nearby sun barriers (e.g., trees, building, canopies) or by orienting the signs away from due east or due west.
- B. Make sure that signs are clearly illuminated day and night. Where lighting fixtures are provided within sign assemblies use long lasting energy efficient lamps and consider use of solar-powered units. Alternatively, use lighting outside of the sign, i.e. general lighting; consider retroreflective backgrounds and messages.

REAL-TIME DISPLAY SIGNS

- A. There appear to be limited vendors that have experience in manufacturing and supporting the integrated RTD recommended in these specifications and deployed in the variety of climates in the region. Sign issues have included overheating, display splotches, and condensation. Pre-qualification of RTD vendors should be considered. Due diligence into RTD vendor qualifications/ references should be performed.
- B. A site-and-path survey is essential for any local wi-fi communication links to RTD signs. This should be performed by the Contractor using the actual radio and antenna equipment being installed prior to approval of the equipment. Wi-fi connections may be blocked or impacted by transit vehicles, which may require adjustments such as higher antenna placement, or repeaters.
- C. Site-and-path results should be submitted along with the equipment submittals to ensure that same equipment from testing is deployed. The integration testing period should be of sufficient length to trouble-shoot and fine-tune wi-fi communication links.
- D. 4G Cellular communications to RTD signs have been successfully implemented in the South Bay. The viability of 4G or other cellular service for each site should be confirmed with cellular carriers prior to construction. The recurring costs of monthly cellular bills should be considered.

TESTING AND TRAINING

- A. In order to minimize time for field configuring and troubleshooting communications equipment after the RTD is installed, the Contractor should set up a testbed for each RTD sign prior to the deployment of any RTDs. All communications equipment and configurations should be set up and tested as if it were in the field (per the post installation test), including remote check-in. Contractor should run the testbed with test scripts and under different scenarios, including power failure, and communications failure, and recovery and troubleshooting procedures.
- B. Schedule should include entries for the test plan submittals with sufficient time for review and comment. Consider requiring test days to be scheduled a minimum of 14 days after test plans have been approved. Testing should not be scheduled until test plans have been approved.
- C. Schedule should include entry for training and maintenance of the sign. Agency maintenance and operator should be invited to the construction kick-off meeting to ensure that any background information is provided and specific questions they may have can be addressed in the training sessions.

APPENDIX A

TRANSIT INFORMATION DISPLAY MAP GRAPHIC GUIDELINES

VERSION 6.0—AUGUST 1, 2019

SPONSORED BY:



METROPOLITAN
TRANSPORTATION
COMMISSION

TRANSIT INFORMATION DISPLAY

1.0 PAGE SIZE

The majority of TIDs are printed out as 47" x 47" signs. There are a few exceptions for certain cases where the artwork is scaled or is designed to fit into refurbished cases of different sizes but for the majority of newly constructed and refurbished cases, 47" x 47" is the standard printed size.

Dimensions (width x height)

TID STANDARD SIZE	TID NON-STANDARD SIZES
47" x 47" (most locations)	44" x 44" – Transbay Temporary Terminal
-	36" x 50" – Ferry Terminal, San Francisco
-	33.5" x 37.125" – certain triangular BART refurbished cases

2.0 SIZE OF ELEMENTS

DESIGN ELEMENT	SIZE (WIDTH X HEIGHT)
Full TID art board	47" x 47"
Header: Green banner	41" x 6"
Header: Black square	6" x 6"
Orange "information" icon 0.25" bottom & left margin in black square	4.5"
Map	41" x 41"
Full sidebar section	6" x 41"
Sidebar header: Green "Transit Information" section below orange "i" icon	6" x 2"
Sidebar footer ("Sponsored by MTC...") 4-pt top border	6" x 2.5"

The recommended document structure is an Illustrator (.ai) file of the map artwork (41" x 41" or larger) placed into and InDesign (.indd) file containing the header and sidebar elements (47" x 47"). The sizes given of display elements are intended to be relative to the standard 47" by 47" display. Where TIDs must be created in nonstandard sizes, other elements should be adjusted to fit.

3.0 HEADERS/COMMON SIDEBAR ELEMENTS

3.1 COLORS

TID MAP COLORS



Map Banner/ 511 GREEN

Pantone 363C

CMYK:

68-0-100-24

Orange Transit Info Circle

Pantone 151C

CMYK:

0-48-95-0

White Type

“Paper” or

CMYK:

0-0-0-0

Black Border

CMYK:

0-0-0-100

3.2 TYPEFACES: TITLES, TRANSLATIONS

The four (4) standard sign headers are:

- Station Map
- Transit Stops
- Transit Routes
- Schedules & Fares

Where the station and stop maps are combined, the header is “Transit Stops” (e.g. FA).

Where there is only one TID panel in the set, the header is “Transit Information” (e.g. SJC).

Refer to section 3.5 in Appendix A for a full list of hub codes.

TYPEFACE SPECIFICATIONS

Header Titles

Frutiger 65 Bold

Typeface size: 250 pt

Tracking: 5

Header Subtitles/Translations

Frutiger 65 Bold

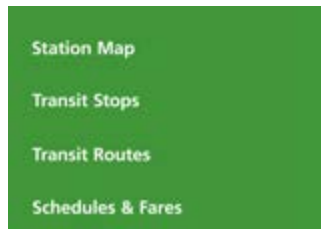
Typeface size: 45 pt

Tracking: 5

3.3 TRANSLATIONS

Each main TID header is translated into Spanish and Chinese in a smaller point size one line below. A third translation can also be added where there is a predominant language spoken in the vicinity (e.g. Vietnamese on Vietnamese on hubs such as Mountain View or Palo Alto). Horizontal spacing between the translations is approximately 2".

English:



Spanish:



Chinese:



Vietnamese:



3.4 ORANGE-I ICON ON TIDS

Orange Circle:

4.5" diameter

Aligned .25" from the bottom and left sides of the black square

White “i”:

Times New Roman, Bold italic

Typeface Size: 350 pt

The “i” should always be oriented at its regular italicized angle.

3.5 STANDARD SIDEBAR INFO

TRANSIT INFORMATION, HUB NAME, CITY

The standard information in the sidebar used to identify the signage and the station include the following three items: “Transit Information,” “[Station/Hub Name],” and “[City Name].” “Transit Information” is on a green background; the station/hub name, city name, map key, and all other sidebar elements are on a white background. The station/hub name is separated from

the name of the city with a 4-pt. black stroke; and another 4-pt. black stroke below the city name separates it from the map key. The city name is always indicated, even if it is formally contained within the hub name.

Sidebar Typeface Specifications:

“Transit Information”

white text in green color bar:

Frutiger 75 Black

Typeface Size: 48 pt

Leading: 50 pt

Station/Hub Name:

Frutiger 75 Black

Typeface Size: 48 pt

Leading: 56 pt

City Name:

Frutiger 55 Roman

Typeface Size: 48 pt

Leading: 56 pt

511 LOGO/INFO, MTC SIGN COMMENTS FOOTNOTE

511 logo and phone number/website located at the bottom of the sidebar section:

Size of logo and subtext: 3.5" (width) x 4.8" (height)

Standard text below logo:

Free Bay Area Transit Information

Dial 5-1-1 or visit 511.org

Standard Sign Comments footnote used on all TIDs and kiosk at MTC sponsored hubs:

Sponsored by the Metropolitan Transportation Commission. Contact us at (510) 817-5900 or signcomments@mtc.ca.gov

SIGN ID SYSTEM

Most hubs have both TIDs and kiosk. Each individual sign (both sides of each kiosk and every panel of each TID set) has a unique identification number. The identification number is based on the 2- or 3-digit acronym or alphanumeric station identifier (“hub code”) and the number of kiosk or TID sets at the hub.

Sample Sign ID:

4K-T2-3 [Hub code–TID set number–panel number in set]

The code indicates the third panel (Transit Routes map) in the second TIDs set at the SF Caltrain @ 4th & King hub.

Hub Codes for the initial 26 MTC sponsored hubs:

12S	12th Street / Oakland City Center Station
4K	San Francisco Caltrain @ 4th & King
CC	Civic Center / UN Plaza Station
DP	Dublin-Pleasanton Station
ECN	El Cerrito del Norte Station
EM	Embarcadero Station
FA	Fairfield Transportation Center
FE	Ferry Terminal (SF)
FM	Fremont Station
GA	Great America & Lick Mill Transit Center
MI	Millbrae Station
MO	Montgomery Station
MV	Mountain View Transit Center
NA	Napa Solsol Gateway Transit Center
OAK	Oakland International Airport
CO	Oakland Coliseum
PA	Palo Alto Transit Center
PH	Pleasant Hill Station
RD	Richmond Station
SRF	San Rafael Transit Center
SRS	Santa Rosa Transit Center
SFO	San Francisco International Airport
SJC	San Jose International Airport
SJD	San Jose Diridon Transit Center
TT	Transbay Temporary Terminal
VA	Vallejo Transit Center

3.6 MAPS

Most maps are oriented northward, with a directional “You Are Here” star indicating the orientation of the user relative to the area shown on the map.

The Station Map details the interior of the station and the location of amenities such as ticket machines, bicycle parking, stairs, elevators, and wheelchair-accessible points.

The Transit Stops map shows the location of the closest transit stop for all lines that run through the station and in the vicinity of the hub.

Depending on the number of transit lines, the Transit Routes map shows agency-colored strokes indicating the paths of travel for all of the transit routes, or only for regular service and all-day routes, in the area surrounding the station.

For a smaller hub with less transit stops and a compact station layout, the Station Map and Transit Stops map may be combined into one “Transit Stops” TID (e.g. FA, MV, GA).

The Transit Routes map shows agency-colored lines indicating the paths of travel for all of the transit routes in the area surrounding the station. If the volume of transit lines that serve the area makes the map visually unclear, the map can be adjusted to show only regular service and all-day routes, with additional lines indicated in an italicized note in the sidebar.

The last TID shows Schedules & Fares for all transit lines that stop in the hub area. Specific information per TID type is explained in the following sections.

COMPASS AND SCALE

A north arrow is included on the maps to help users relate each map within the set and better orient themselves.

When possible, a scale is also included to indicate distances in miles and/or kilometers.

3- OR 5-MINUTE WALK CIRCLES

5-minute walk circles are indicated on the maps to give users a sense of scale between the different maps. Station maps are the most zoomed in, followed by Transit Stops maps, then Transit Routes maps which show the largest area, including points of reference surrounding the station.

The size of the 5-minute circle is equivalent to a ¼-mile, 1000-foot, or 305-meter radius and is indicated in the Map Key.

The interior of the circle is shaded with a 20% white transparency to highlight it on the map. On certain Station or Stops maps, if the map area that falls within the circle is larger than 2/3 of the overall map, the transparency overlay does not have to be applied, in order to avoid discoloration of a majority of the map.

At certain hubs with maps at a larger scale, a 3-minute walk circle may replace the 5-minute walk circle when the 5-minute walk circle encompasses too much map area, but it should be universally applied to the three maps (all 3-minute walk circles or all 5-minute walk circles).

4.0 STATION MAP

4.1 SIDEBAR CONTENT

The Map Key for the Station Map contains all of the transit and infrastructure icons used to indicate the amenities in and around the station.

“You Are Here” with the You Are Here star and “Transit Information” with the orange information icon should be listed at or near the top, followed by any exit names, then the additional station icons, listed alphabetically.

For street-level stations, agency names along with matching circular modal icons (bus, rail, etc.) in agency colors can also be included.

4.2 COLORS

Underground/interior station components:

MAP LOCATION	FILL	STROKE
Background gradient	Pantone 400C to 402C	none
Street-level intersections for reference	Pantone 400C	403C (3.5 pt)
Station walls and infrastructure	White	411C (10 pt)
Paid areas of station	10% tint Agency color	Agency color (7 pt)
Section view of station, background	Pantone 402C to Warm Gray 11C	none
Section view paid area platforms	10% tint Agency color	none

Aerial, street-level, and open-air station components:

MAP LOCATION	FILL	STROKE
Blocks/background & directional arrows	Pantone 402C (75-100%)	none
Streets	Pantone 400C (60-100%)	none
Secondary/reference buildings	Pantone 403C	none
Transit Station buildings	White	Pantone 403C (10 pt)
Transit bays, docks & platforms	White	Pantone 403C (10 pt)
Single-agency paid areas & platforms	10% tint Agency color	400C (3.5 pt)
Train Tracks	none	Pantone 403C (1 pt)
Parks/Green space	Pantone 363C (50%)	none
Water	Pantone 658C	none
Civic space	Pantone 728C	none

4.3 TYPEFACES

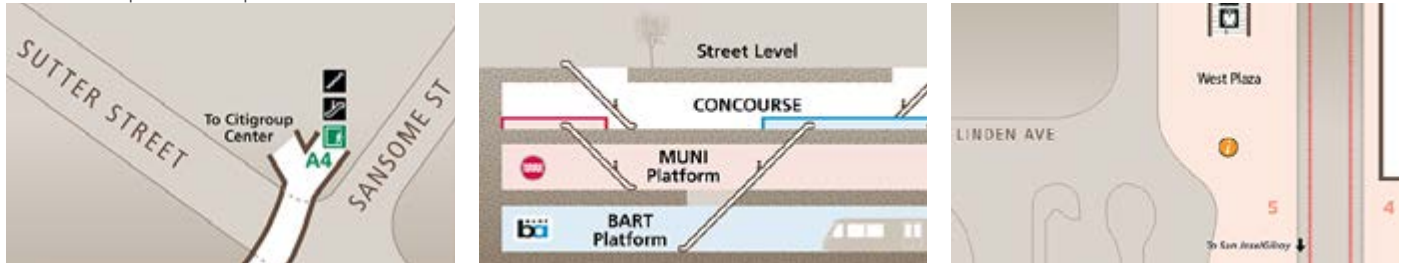
Underground/interior station components:

MAP LOCATION	TYPEFACE	TYPEFACE SIZE	COLOR
Street names	Frutiger 57 Condensed, all-caps	36-54 pt (100-150 tracking)	Pantone 411C
"To (Exit destination)"	Frutiger 65 Bold	32 pt	Black
Exit ID numbers	Frutiger 65 Bold	42 pt	Pantone 3415C
Map type/view labels	Frutiger 65 Bold	46 pt	Black or White
Elevation drawing labels	Frutiger 65 Bold	42 pt	Black

Aerial, street-level, and open-air station components:

MAP LOCATION	TYPEFACE	TYPEFACE SIZE	OTHER
Points of interest	Frutiger 57 Condensed	36-54 pt (25 tracking)	40 pt leading
Off-the-map destinations	Frutiger 56 Italic	28 pt (25 tracking)	30 pt leading
Plaza/area labels	Frutiger 57 Condensed	36 pt	Color: Black

Station Component Examples



4.4 ICONS

The station map typically includes icons indicating: means of access to and from station exits, ticketing operations, station amenities, modal icons, and location of transit information displays.

Some icon labels may have a small caption when described in the sidebar, noted by () in the table.

Station Map:

ACCESS	TICKETING	AMENITIES	OTHER MODAL
Elevator	Add fare	Bill Changing	Bike Lockers
Escalator	Clipper® (add value machine)	Coffee Shop	Bike Parking
Exit	Ticket Agent	Florist Booth	Bike Parking Facility
Stairs	Ticket Exchange	Food	Bike Share
Station Entrance/Exit	Ticket Vending Machine	Lost & Found	Bike Station
	(Agency) Tickets	Newsstand	Park-and-Ride
	Transit Store	Parking	Passenger Pick-up/Drop-off
		(Agency) Parking	Platform Identification
		(Agency) Police	Taxi
		Restrooms	Taxi Stand
		Security Booth (on duty during station hours)	Transit Stop
		Station Agent Booth	
		Telephone	
		Waiting Room	
		Wheelchair Accessible	

4.5 LABELS

See previous “Icons” and “Typefaces” sections regarding which elements to label and appropriate label styling.

External/outdoor stations should label all transit stops in the station area with an arrow and an associated list of stops containing the following identification information:

- The transportation modal icon (bus, ferry, light rail, heavy rail etc.) in white on a circle with agency-colored fill
- The logo of the transit agency operating the service
- The route numbers or names that utilize that stop, separated by bullet boxes/bullets

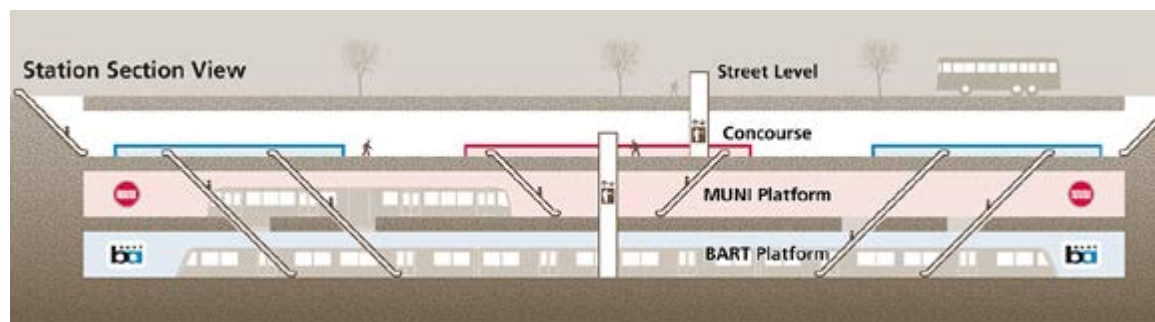
This can also be used to indicate agency drop-off locations.

4.6 INSETS

A small version of the Transit Stops map showing the transit station and local points-of-interest in context may be included as an inset on the Station Map, and is typically titled “Area Map” or “Station Area Map.” This is placed in a frame with a 4-8 pt. white border, and the map title in a tab with rounded corners.

4.7 SECTION VIEW

For underground and multi-level stations, a section view of the station can be included at the bottom of the map to show grade changes, locations of stairs, escalators, and elevators, and a standing “You Are Here” icon for orientation within the levels.






Section View Example

Map Key and Transit Line Table Examples

Map Key



	Santa Clara Valley Transportation Authority (VTA)
Regular Bus Service	
22	Eastridge Transit Center
22	Palo Alto Transit Center
63	Almaden Expy & Camden
63	San Jose State University
64	Almaden LRT Station
64	McKee & White
68	Gilroy Transit Center
Community Bus Service	
65	13th & Hedding
65	Kooser & Blossom Hill
Express Bus Service	
168	Gilroy Transit Center
181	Fremont BART
522	Eastridge Transit Center
522	Palo Alto Transit Center
	Monterey-Salinas Transit (MST)
Regular Bus Service	
55	Monterey
81	Fort Hunter Liggett
	Amtrak Highway 17 Express
Express Bus Service	
17	Northbound to San Fernando & 5th
17	Southbound to Santa Cruz Metro Center

5.0 TRANSIT STOPS

5.1 SIDEBAR CONTENT

MAP KEY

The Map Key for the Transit Stops map contains the modal icons for bus/shuttle, rail, ferry, or other modes of transit, the “Transit Stop” arrow, and other relevant icons used on the map.

On Transit Stops maps that do not have an accompanying Station Map, station icons should be shown, and agency names along with matching circular modal icons (bus, rail, etc.) in agency colors can also be included.

Included Icons:

- You Are Here (e.g. star)
- 5-minute Walk, 1000 ft/305 m Radius
- Modal Icons (e.g. BART train, Bus, Light Rail, Ferry)
- Transit Stop (e.g. arrow)
- Station Icons
- Transit Information (e.g. orange circle)

TRANSIT LINES TABLES

Below the Map Key is a list of all the destinations or line names for each transit line shown on the Transit Stops map, grouped into tables by transit agency. Each agency has its own table and each table header includes the agency's logo followed by its name. Below the header are two columns—one listing all the routes with stops that fall within the map boundaries, and the other with their specific line names or destinations. Lines are listed alphabetically and may be grouped into subcategories by type of service such as Local Service, Express Service, Commuter Routes, All-Nighter Routes, etc.

Formatting:

Width: 4.25", Height: varies

TABLE LOCATION	INFORMATION	TYPEFACE	TYPEFACE SIZE/COLOR	CELL FILL
Header Row	Agency Logo Agency name	Frutiger 67 Bold Condensed	16 pt / White	White
Table Rows	Route number ID Description	Frutiger 47 Light Condensed	16 pt / Black	Pantone 400C (tan) / White Alternating row colors
Subcategory Rows	Type of Service (e.g. Local, Express, Light Rail etc.)	Frutiger 67 Bold Condensed	16 pt / White	Pantone 411C (brown)

FOOTNOTE

Standard footnote below the Transit Lines tables:

Note: Service may vary with time of day or day of week. Please consult transit agency schedule or contact 511 for more information.

5.2 COLORS

Map colors identical to Station Map colors:

MAP LOCATION	FILL	STROKE
Blocks/Background & Directional arrows	Pantone 402C (75-100%)	none
Streets	Pantone 400C (60-100%)	none
Parks/Green Space	Pantone 363C (50%)	none
Water	Pantone 658C	none
Civic Space	Pantone 728C	none

Map colors that differ from Station Map colors:

MAP LOCATION	FILL	STROKE
Transit Station Buildings	Pantone 403C	none May have a drop shadow effect
Train Tracks	Agency color	none

5.3 TYPEFACES

ON MAP	TYPEFACE	TYPEFACE SIZE	COLOR
Street Names	Frutiger 57 Condensed, all-caps	24-42 pt (200 tracking)	Pantone 411C
Point-of-Interest labels	Frutiger 57 Condensed	32 pt (34 pt leading)	Black
Off-the Map destinations (along map edges)	Frutiger 46 Light Italic	28-30 pt (30 pt leading)	Black (paired with radiused arrow indicating direction of travel)
Name labels on secondary transit/rail stations	Frutiger 67 Bold Condensed	32 pt (34 pt leading)	Black

WITHIN STOP BULLET BOX	TYPEFACE	TYPEFACE SIZE	COLOR
Transit Route Numbers (separated by a 24 pt black bullet)	Frutiger 67 Bold Condensed	36 pt	Black
Non-Numerical Transit Routes (words or acronyms)	Frutiger 67 Bold Condensed	32-34 pt	Black
Directional/Destination info specified after route numbers (only if multiple directions of the same route appear within the map area)	Frutiger 67 Bold Condensed	24 pt	Black (aligned to baseline of route number)

MAIN STATION CALL OUT	TYPEFACE	TYPEFACE SIZE	COLOR
Station Name Header	Frutiger 65 Bold	48 pt (50 leading)	Black

5.4 ICONS

The main transit hub that is the subject of the map should be indicated within an aerial view of the station shape composed of Pantone 411C filled blocks with a drop shadow and no stroke.

Locations of all the TIDs and kiosk should be indicated using the orange “transit information” icon placed at each TID or kiosk's geographically specific location, relative to local street intersections and points of interest.

Any secondary rail stations that fall within the map boundaries should be indicated along the train tracks with a 0.25" diameter white bullet stroked in black (4 pt), and the station name.

Highway icons/shields should be oriented to match the angle of the name associated with the highway (similar to street names which are oriented parallel to the angle of the streets) to reduce their visual presence and instead emphasize the transit information. Highway shields should be an outline of the shield shape, the same color as street names. Their use should be minimized where the highway number is not the designation by which the street is primarily known (e.g., Sloat Blvd./CA-35 in San Francisco, or Alum Rock Ave./CA-113 in San Jose).

Off-the-map destinations are indicated using a black arrow with radiused corners. This differs from the “Transit Stop” arrow which has sharp points.

ARROW/TRANSIT STOP AND LABEL EXAMPLES

"Transit Stop" arrow and leader line



"Off-the-map destination" arrow



Same "off-the-map" arrow used to indicate one-way streets on Station/ Stops maps



"One-way" arrow used on Routes maps next to route markers on single-direction segments of routes



Bullet box with routes separated by bullets or carriage returns



The You Are Here (YAH) star should be prominently displayed at each orange "Transit Information" icon and oriented the way the user is facing relative to the map contents. It should be large enough to be noticed quickly (approximately 0.5" to 0.75" in width). Evaluations of pilot hubs conducted in 2009 found that users often had difficulty locating it at a smaller size, especially on maps with a large number of stops shown.

5.5 ARROWS/TRANSIT STOPS

The arrow symbol indicates the exact location of a transit stop along a sidewalk or bus island and the direction of travel for the arriving transit vehicles. When multiple transit agencies share the same stop, arrows are arrayed in a line. Ferry terminals use a rectangle instead of a line, because boats are not directional in the same way as a street-running vehicle. Larger rail platforms are indicated with a black leader line that terminates with a black bullet/bullet, instead of an arrow, since the leader line points to an entire platform rather than a specific stop location.

Arrows indicating transit stops on the map have sharp points and a 3-pt. street-colored stroke around them. Fill color matches the color of the agency they are associated with.

Arrows indicating off-the-map destinations are black with no stroke and have rounded "ears."

5.6 LABELS

Transit stop/route numbers should be labeled with destinations when stops are bidirectional or stops for the same route in different directions are shown on the map and need to be distinguished.

Routes that share a stop should be listed in numerical order in the same bullet box and can be separated by bullets or carriage returns.

5.7 BULLET BOXES/BULLETS

Bullet boxes/bullets contain a circular agency-colored modal icon, an agency logo, and all of that agency's lines located at that particular stop. They are connected by a leader line to an arrow indicating the exact stop location. Routes with only one direction shown on the map can be listed by number

and separated by bullets within the same bullet box. Routes with bidirectional or multiple stops shown on the map should specify destination or direction next to the route numbers, and be separated by carriage returns (Leading: 48 pt) when sharing a bullet box.

5.8 INSETS

An inset map (about 8"-12" tall/wide) showing local connections to transit or points of interest may be included on the Transit Stops map. It should be placed in a frame with a 4-8 pt white border (matching the inset map on the Station Map TID) and include a map title (Frutiger 65 Bold, 46 pt) in a white tab with rounded corners.

6.0 COMBINED STATION+STOPS MAP (REFERRED TO AS TRANSIT STOPS)

6.1 TRANSIT STOPS CONTENT

Combined Station+Stops maps can be found at a number of transit hubs, and are referred to solely as the “Transit Stops” TID in the green header. They incorporate aspects of both the Station Map TID and the Transit Stops TID including:

- Accessibility, amenity, and transit/transportation icons within and around the station
- Layout of platforms, bus bays, rail tracks, piers, and nearby street intersections
- Location of taxi zones, passenger drop-off/pick-up areas, and transit center parking areas
- Orange “transit information” icons indicating TID and kiosk locations
- Transit route bullet boxes and arrows with leader lines to specific stop locations
- Connections to local bicycle/pedestrian trails or pathways
- 5-minute walk circle

7.0 TRANSIT ROUTES

7.1 SIDEBAR CONTENT

MAP KEY

The Transit Routes map key defines the agencies and modes associated with the various colored and dotted paths on the map and identifies their representative map symbology.

Map Key contents:

ON MAP	STROKE	COLOR
Rail tracks	Dash Stroke: 8 pt, dash=1, gap=4 Solid Stroke: 2 pt, center-aligned	Solid Stroke: (Agency) color
BART tracks	Solid Stroke: 12 pt	Process Blue C
Bus routes	Solid Stroke: 6-8 pt Route marker (0.5" diameter) center-aligned, representing one of the agency's routes (text Frutiger 65 Bold)	Stroke: (Agency) color White
Irregular/Express route	Dash Stroke: 6-8 pt dash=6, gap=6 (dotted)	(Agency) color
Route Terminus	Route marker (0.5" diameter) Stroke: 2 pt	Stroke: Black Fill: any color
Bicycle Route	Dash Stroke: 4 pt, dash=0.02, gap=8, cap=round, corner=round join	CMYK 68-27-93-10

FOOTNOTE(S)

Standard footnote in the sidebar of the Transit Routes map when applicable (typically used at busier urban/downtown hubs where not all routes can be shown on the map):

This map does not show all commuter, express, special event, or all-night routes. Service may vary with time of day or day of week. Service changes may have occurred since printing. Please consult transit agency schedule or contact 511 for more information.

7.2 COLORS

See previous “Colors” Section under “Transit Stops”.

7.3 TYPEFACES

See “Labels” Section below.

7.4 ROUTE MARKERS

Agency-colored paths are drawn on the Routes map to indicate streets with transit service. If an agency has multiple lines running on the same street, they are represented collectively using a single stroke and are instead distinguished by route markers. Different agencies with service on the same street should each have their own path drawn with a stroke in their agency-identifying color. Streets with these transit routes may have street names in a bold typeface to distinguish them from streets with no transit service.

Circular route markers are used to identify the specific lines of service running on each street. Route markers contain a route number or ID (typeface: Frutiger 65 Bold, 24 pt., tracking: -20, color: white) and are approximately 0.5" in diameter, with a fill that matches the agency color of the stroked paths. For line numbers/acronyms that are three or more characters and require a wider route marker, the circle should be changed to a pill shape with the ends remaining as half-circles.

Route markers should be used along all of the bus paths shown on a map to identify which specific routes run on any streets with transit service identified. They should be placed at frequent enough intervals to allow the route of each line to be traced throughout the map.

7.5 BICYCLE MARKERS/ROUTES

When the information is available, dotted green bicycle routes should be shown on the Transit Routes map and indicated by circular green bicycle route markers. On these maps "with Bicycle Routes" should be added to the green header.



7.6 LABELS

In addition to bus/shuttle, rail, and ferry services, all of the following should be labeled on the Transit Routes map: streets, bodies of water, neighborhoods/cities, civic areas, transit stations/terminals, park-and-ride lots, airports, post offices, parks, hospitals, community centers, and schools.

ON MAP	TYPEFACE	COLOR
Destinations/Points of Interest	Frutiger 57 Condensed, 20 pt	Black
Parks	Frutiger 56 Italic, 18 pt	Black
Street Names	Frutiger 57 Condensed, 16 pt Tracking 200	Pantone 411C
Neighborhood/City Names	Frutiger 67 Bold Condensed, 44 pt	Warm Gray 11 C Stroke: Pantone 400 C, 3 pt
Main transit station name	Frutiger 65 Bold, 40 pt	Black
Secondary station names (in station call outs)	Frutiger 67 Bold Condensed, 24 pt	Black

7.7 STATION BULLET BOXES

BUS ROUTE MARKERS

Main and secondary transit station call outs/bullet boxes should contain route markers for all agency routes that run through or terminate at the station. If the hub is the terminus of a route, the route marker should have a 2 pt black stroke around it.

RAIL REPRESENTATION

All connecting rail services within the station should also be represented in the call out, with symbology identical to that used in the map key.

SECONDARY VS. MAIN STATIONS

The main station on the Transit Routes map is indicated with a large, bold typeface for the station name. All route markers in the call out should be grouped by agency, and ordered in a right side column by level of service. Matching agency logos should be aligned with the proper route markers in a center-aligned column to the left of the route markers.

Secondary stations with multiple connecting lines or services may also be called out with a station bullet box. The station name is shown in a smaller, condensed typeface, and agency logos are not included (only route markers), to minimize redundant information and distinguish it from the main station bullet box. Bus route markers should be clustered by agency, and rail should be indicated with the agency name typed beside a small symbol of the corresponding track.

7.8 INSETS

An inset map may be included on the Transit Routes TID indicating regional bus or rail connections from the local hub to hubs/stations in other counties.

8.0 SCHEDULES & FARES

8.1 SIDEBAR CONTENT: STANDARD 511, BIKES, CLIPPER® + RETAIL LOCATIONS

The following paragraphs should be used in the sidebar section of all Schedules & Fares TIDs, along with matching icons for 511 real time, bicycles, and Clipper®.

Standard sidebar content:

511 REAL-TIME DEPARTURES

511 provides free, up-to-the-minute departure times for the transit agencies to the left that have this symbol. Other Bay Area transit agencies will be added in the future.

To find out when your next bus or train will depart, check nearby displays or simply call 511 and say “Departure Times.” You’ll then be asked to enter your Stop ID number. If you don’t know it, you can say “I don’t know,” and the system will prompt you to enter your route and stop. 511 will respond with departure times for your route and will also include the Stop ID for future use. You may also look up your stop’s ID online at the 511 Transit page (transit.511.org).

Regional Transit Diagram



BICYCLES ON TRANSIT

Rail/Ferries: Bicycles are allowed on all Bay Area ferries and nearly all rail lines. Exceptions are San Francisco Muni Metro, historic streetcars, and cable cars.

Buses: Nearly all Bay Area public transit buses are equipped with bicycle racks.

General: While bicycles are allowed on most transit services, there are some space limitations and, in some cases, times when bicycles are not allowed on board. For specific transit operator policies and procedures go to 511.org and click on the bicycling tab, or call 511 and say “bicycling” to speak to an operator who can answer your questions.

GET CLIPPER®!

Clipper® is the new, convenient way to pay for transit rides in the Bay Area. The reloadable Clipper® card stores value as cash and transit passes to pay your fare on AC Transit, BART, Caltrain, Dumbarton Express, Golden Gate Transit and Ferry, Muni, SamTrans, San Francisco Bay Ferry, and VTA. Eventually, all Bay Area transit agencies will accept Clipper®.

Whether you pay-as-you-go with cash or purchase passes or ticket books in advance, Clipper® makes commuting easier. Clipper® works with a variety of employee transit benefits providers, including Commuter Check®, Wage Works®, and Clipper® Direct.

To learn more about Clipper® or to get a Clipper® card:

Visit Clipper®card.com,

Call 877.878.8883, or

Visit a nearby retailer:

[Up to 3 or 4 locations with addresses and phone numbers]

8.2 REGIONAL TRANSIT DIAGRAM

The Regional Transit Diagram is a compilation of all the service areas of the various transit agencies that operate in the Bay Area and points where they connect with each other.

It is typically given the space of two columns on the Schedules & Fares TID, either at the top left or the bottom right of the TID.

8.3 AGENCY LOGOS, MODAL ICONS, COLORS, DESCRIPTIONS

Space on the Schedules & Fares TIDs is allotted to the agencies that operate at the transit hub. Size of information on the sign varies based on the volume of each agency's service, and is distributed based on an 8-column grid structure of the page (sidebar excluded), where each column is 5" wide and approximately 20" tall (the vertical space below the header is divided in half).

Each transit agency that operates service at the hub has its own section of information regarding fares, schedules, and any other ridership guidelines. The section is marked with the agency's logo at the top, a short description of the agency's services and service area, and the modal icon that represents their stops and services on the Station Map and Transit Stops TIDs. The written agency description should include the phone number for the agency's customer service line if possible, so passengers can make direct contact for additional information when necessary.

Each agency is assigned a color that represents the agency's services across all of the TIDs in the Hub Signage Program. This color is used on the route markers, paths, and bus stop bullet boxes, and is generally based on a logo color, though it may be altered to ensure better contrast between agency colors that overlap at certain transit stations.

8.4 FARE INFORMATION, EFFECTIVE DATE

Fare information relevant to the agency services that operate in the transit station should be provided in the form of a table or list and titled "Fare Information" in bold. Typically it should include information on fares for all age levels and relevant types—youth, adult, senior, disabled, Medicare, military, children, Clipper®, etc.—and information on the valid identification methods for qualifying for eligible discounts. Descriptions about methods or types of payment maybe also be included when space is available.

All fare information should be labeled with the date it became effective as part of the transit agency's policies. This date and the information provided should be updated as the transit agency's policies are updated.

8.5 SCHEDULE OR FREQUENCY INFORMATION, EFFECTIVE DATE

Schedule or frequency tables are used based on the type of information provided by the agency and the type of service the lines they run have (e.g. frequent, hourly, irregular, commute, weekend, etc.). This information follows the fare information section and is separated from it with a 2 pt. black rule approximately 4.5" wide (for a single column section) and centered within the column.

When schedule times are presented, the section is called "Schedule Information" and when frequency tables are presented, the section is called "Guide to Frequency of Service." Both titles should be followed by the date the information was effective.

8.6 FARE/SCHEDULE TABLES

SCHEDULE TIMES VS. FREQUENCY TABLES, (MIN) FOOTNOTE

Transit schedules are typically presented in the form of frequency tables when schedule times are at regular intervals, are too numerous to list, or when they change more frequently than the signs can be updated. Frequency tables include:

Rows: Each route that services the hub

Columns: First trip of the day as scheduled, frequency of service throughout the day in minutes, and the time of the last trip of the day

Frequencies can be divided up by time of day if they vary significantly between different hours of the day, such as during peak commute hours versus midday. When there is insufficient space to have "min" after each frequency listed in the table, an additional note is included under the title that states, "(average time in minutes)."

When departure times are irregular or infrequent, they are best listed as a table of all scheduled times. If a large number of routes are being shown this way, there are typically multiple header rows then columns by day:

Header rows: Route number and name, subdivided into the dual directions or destinations of the route, and further subdivided into the days of service with different schedules (e.g. Mon-Fri, Sat, Sun/Holidays)

Columns: Scheduled times for each specific route/direction/day

Fare/Schedule Table Examples

Schedule Information (effective January 4, 2015)

Route 1 San Francisco to San Rafael	Route 2 San Francisco to Marin County via Sausalito	Route 3 San Francisco to Marin County via Sausalito	Route 4 San Francisco to Marin County via Sausalito	Route 5 San Francisco to Marin County via Sausalito	Route 6 San Francisco to Marin County via Sausalito	Route 7 San Francisco to Marin County via Sausalito	Route 8 San Francisco to Marin County via Sausalito	Route 9 San Francisco to Marin County via Sausalito	Route 10 San Francisco to Marin County via Sausalito	Route 11 San Francisco to Marin County via Sausalito	Route 12 San Francisco to Marin County via Sausalito	Route 13 San Francisco to Marin County via Sausalito	Route 14 San Francisco to Marin County via Sausalito	Route 15 San Francisco to Marin County via Sausalito	Route 16 San Francisco to Marin County via Sausalito	Route 17 San Francisco to Marin County via Sausalito	Route 18 San Francisco to Marin County via Sausalito	Route 19 San Francisco to Marin County via Sausalito	Route 20 San Francisco to Marin County via Sausalito	Route 21 San Francisco to Marin County via Sausalito	Route 22 San Francisco to Marin County via Sausalito	Route 23 San Francisco to Marin County via Sausalito	Route 24 San Francisco to Marin County via Sausalito	Route 25 San Francisco to Marin County via Sausalito	Route 26 San Francisco to Marin County via Sausalito	Route 27 San Francisco to Marin County via Sausalito	Route 28 San Francisco to Marin County via Sausalito	Route 29 San Francisco to Marin County via Sausalito	Route 30 San Francisco to Marin County via Sausalito
San Francisco to San Rafael	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito
San Francisco to San Rafael	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito	San Francisco to Marin County via Sausalito

Guide to Frequency of Service

effective December 18, 2014
(average time in minutes)

Route	WEEKDAY					
	First	Frequency (approximate)				Last
		6-10a	10a-3p	3-7p	7-10p	
Express / Shuttle Service						
Highway 17 North	5:37a	25	55	35	65	10:20p
Highway 17 South	6:02a	30-45	60	15-30	20-45	10:52p

Route	WEEKEND		
	First	Frequency	Last
Express / Shuttle Service			
Highway 17 South	9:00a ¹	approx. 60 min	10:55p

¹One earlier trip at 7:40 am.

Golden Gate Transit Basic Service Bus Frequency Guide

effective March 8, 2015

Monday-Friday Departures from San Rafael			
Route	First	Frequency	Last
27 San Anselmo	8:47a	30-60 min	7:32p
27 San Francisco	6:05a ¹	15-60 min	5:45p
40/42 Del Norte BART	5:30a	30-60 min	10:00p
44 Lucas Valley	6:06p	²	7:00p
44 San Francisco	7:12a	²	8:08a
70 Novato	6:00a	30-60 min	1:00a
70 San Francisco	4:00a	30-60 min	11:30p
101 Santa Rosa	6:15a	30-60 min	1:15a
101 San Francisco	5:15a	60 min	11:15p

Weekend/Holiday Departures from San Rafael			
Route	First	Frequency	Last
42 Del Norte BART	6:00a	60 min	9:00p
70 Novato	6:30a	30-60 min	1:00a
70 San Francisco	4:00a	30-60 min	12:00a
101 Santa Rosa	7:15a	30-60 min	1:15a
101 San Francisco	5:45a	30-60 min	11:45p

Light face = AM times
Bold face = PM times

¹Route 27: One earlier trip at 4:35 am.
²Route 44: No additional trips.

Alternatively, header rows can also divide information by areas of departure (terminals or street intersections) or Weekdays and Weekends/Holidays, with appropriate routes listed under each.

TYPEFACES

HEADER ROWS	TYPEFACE	COLOR
Route name/number	Frutiger 65 Bold 14 pt, Tracking 5	White (on black fill)
Direction/Destination	Frutiger 67 Bold Condensed 14 pt, Tracking 5	Black (on white fill)
Type of day	Frutiger 67 Bold Condensed 14 pt, Tracking 5	White (on agency-colored fill)
SCHEDULE TIMES	TYPEFACE	COLOR
AM Times	Frutiger 47 Light Condensed 14 pt, Tracking 5	Black
PM Times	Frutiger 67 Bold Condensed 14 pt, Tracking 5	Black

An indication should be made at the bottom of the table stating:
 “Light face = AM times | **Bold face** = PM times”

COLORS

Header rows have a combination of black fill, white fill, agency-colored fill, and no fill. By using the agency’s color as one of the fills, each agency’s information can be recognized visually as a group among all the other information from the various agencies on the same sign.

For frequency tables, rows of routes should have alternating fills of no fill (or white) and 20% black. For tables of schedule times, columns should have alternating fills of no fill (or white) and 20% black.

ROWS AND COLUMNS

Rows and columns vary depending on whether schedule times or service frequencies are being presented.

See previous “Schedule Times vs. Frequency Tables” section under “Fare/Schedule Tables.”

SIZES

Tables should be a width that fits into the 8-column grid, with at least a 0.25" margin between the table and the column guides.

FOOTNOTES

Fare and schedule footnotes are typically in a smaller font at the end of the section.

Fare footnotes may include information about how to qualify for a discounted fare, policies on free fares for children, and other information about fare restrictions.

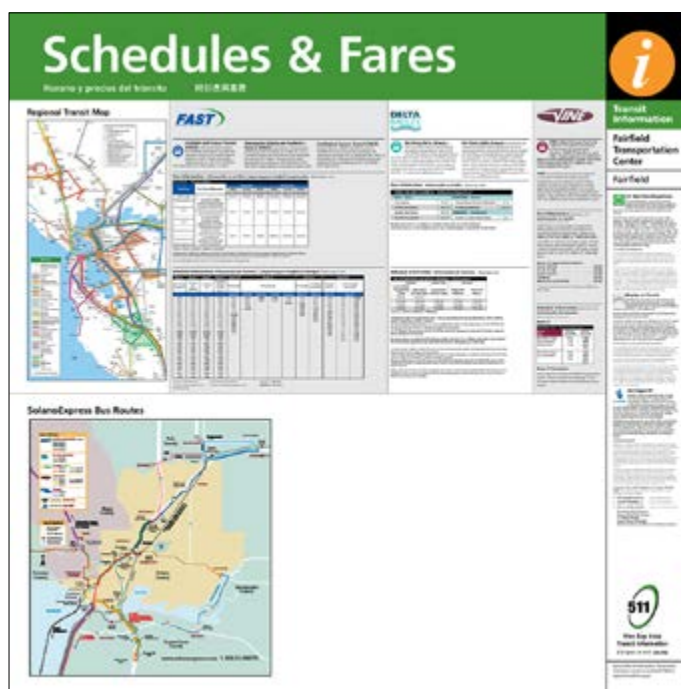
Schedule footnotes correspond with the footnotes provided by each agency on their own schedule publications regarding route variations. They should additionally include information about observed holidays.

8.7 ALTERNATING BACKGROUND COLORS, RULES, AND WHITE SPACE

The overall Schedules & Fares page, as divided into the sections for each agency, should have alternating fills per agency so that adjacent agencies have a slightly different background color of either white or Pantone 402 C (20%).

Where the grid lines separate agencies, a 4-pt., Pantone 402 C (100%) stroke is applied to distinguish the sections and outline the fills.

When there are only a few agencies that operate at the hub, they are given the same amount of space for their information as provided at other hubs, and the rest of the Schedules & Fares sign is left blank.



8.8 FILE STRUCTURES (DIGITAL)

Where operator/agency information spans TIDs at different hubs, the recommended digital file structure is:

One InDesign base file for the agency—each page contains the information for an individual hub, and the pages are inserted as placed files onto the proper TIDs. This base file can then be easily accessed and edited when a specific transit operator is making agency-wide service changes, and information on all the appropriate HSP TID signs will automatically be updated.

KIOSK

9.0 ARTWORK

9.1 PAGE SIZE

Kiosk are printed out as 21" x 50" signs. The interior back panels of installed kiosk should be sized appropriately to avoid interference from the door locks or frames.

All dimensions are width x height

Standard size of printed kiosk signs	21" x 50" (all HSP kiosk)
Typical size of kiosk door viewing area	20" or 20.25" x 46" (visible sign area)

9.2 SIZE OF ELEMENTS

WAYFINDING AND HEADER DIMENSIONS

Orange Transit Information “i” decal (applied as a decal or painted onto the kiosk in the green area above the insert window):

Orange area	9" diameter circle
Black outline	36 pt. stroke, aligned to the outside of the orange circle
White “i”	Times New Roman, Bold Italic Typeface size: 700 pt The “i” should always be oriented at its italicized angle
Neighborhood/City Names	Frutiger 67 Bold Condensed, 44 pt

ON THE PAPER SIGN INSERTED INTO THE KIOSK:

2-ROW KIOSK HEADER (21" X 11.1")

Top white margin	1" (height)
Black bar top row	4.1" (height)
Black bar row 2	2.85" (height)
Green "Transit Information" bar	2.85" (height)
White margin below each color bar	0.1" (height)
Map below header	20.5" (height)

3-ROW KIOSK HEADER (21" X 14.1")

Top white margin	1.05" (height)
Black bar top row	4.1" (height)
Black bar row 2	2.85" (height)
Black bar row 3	2.85" (height)
Green "Transit Information" bar	2.85" (height)
White margin below each color bar	0.1" (height)
Map below header	20.0" (height)

When there is less wayfinding information on a kiosk sign than the number of rows provided, due to more rows needed on a different kiosk at the same hub, the white margins between the rows are removed, or covered with a black rule.

Similarly, the white margin between two rows is removed when a point of interest needs two lines to fit its full name or information (each line fits approximately 15-19 characters), such as "San Jose Diridon Transit Center" or "Transit Connections" and icons indicating which transportation modes are found at the hub.

MAP DIMENSIONS

All dimensions are width x height

Kiosk with 2-row header	21" x 20.5"
Kiosk with 3-row header	21" x 20.0"

The map should be scaled down from its original TID size, approximately 50%, to fit the same information shown on the equivalent TID—including the compass, route markers, and any off-the-map arrows pointing to destinations beyond the edge of the viewable area—in the visible section of the map on the kiosk.

The remaining white space under the map and the sub-header is for the map key and other items such as the Regional Transit Diagram or the Transit Lines tables (for Stops maps).

511 LOGO AND INFO

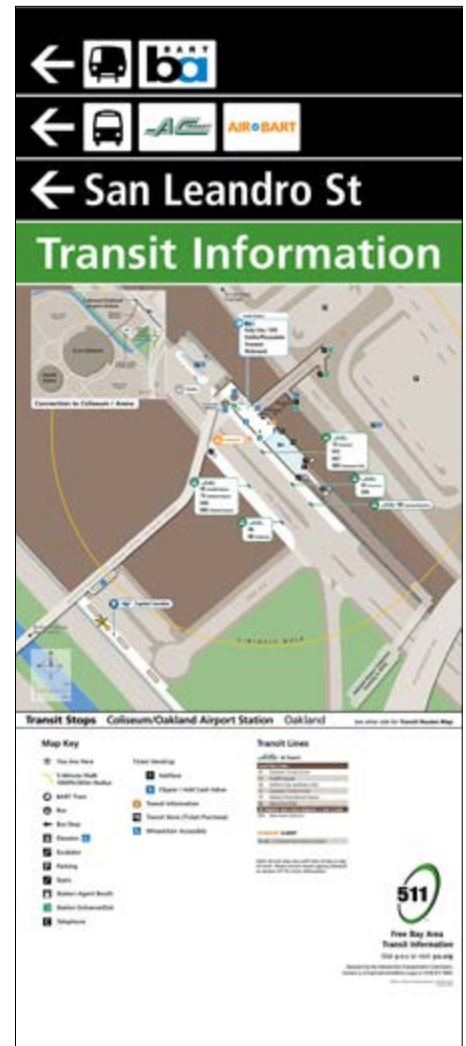
The same “Free Bay Area Transit Information” logo and 511 information used on the TIDs are shown at the bottom right of the kiosk along with the kiosk ID number, and the date of printing.

The 511 logo and information should be about 3.25" x 4.5" and aligned to the right margin of the page, approximately 0.5" from the edge of the sign.

SUB-HEADER AND OTHER TEXT

The sub-header consists of map identification information and is located directly below the map. It is highlighted by two 4-pt. black horizontal rules that are 0.8" apart. The top rule frames the bottom border of the map, and the line of text identifying the kiosk’s type and location is centered between the rules (see “Sub-header” section below for content).

Kiosk Examples



From left to right, the white space below the sub-header is used for:

- Regional Transit Diagram (optional; included when the space is not needed for other information), width determined by the maximum height it can reach while staying within the viewable area of the sign
- Map Key (required), same file as used on the TIDs, scaled down to 60% or 75% of its original size as necessary
- Transit Lines tables (when accompanying the Transit Stops map), either at full scale or a reduced size
- Footnotes appropriate for the various maps (see “Sub-header” section below)
- The 511 “Free Bay Area Transit Information” logo
- The kiosk sign ID and the date of printing, in the bottom right corner of the visible area

9.3 WAYFINDING CONTENTS

ARROWS, ALIGNMENT

The kiosk sign should have a 0.5" margin from the edge on all sides, within which the text and icons fall. Alternatively, the map and background colors should extend to the edge of the 21" width so they appear as full bleed when the printout is inserted into the kiosk window.

The directional arrows in the wayfinding header, when pointing left or right are 2.0397" wide by 1.75" tall. Straight-ahead or diagonal arrows are the same arrow rotated 45, 90, or 135 degrees.

The arrow and accompanying text and/or icons are left justified or right justified in their row in the wayfinding header depending on the side of the sidewalk that the kiosk falls on or the location of the point of interest relative to pedestrian pathways (see “Site/Location-Specific” section below).

From top to bottom, wayfinding messages in the header rows are ordered by physical proximity of the point of interest to the current location.

In each row, the center of the arrow should be a distance of 1.75" from the edge of the sign, and 1.45" from the edge of the text box that accompanies it. The width of the text box then extends the remaining 17.3" to the edge of the 0.5" page margin. Icons used in place of text or between the text and the arrow should also be 1.45" from the center of the arrow.

MODAL ICONS

Modal icons consist of a black transit modal image placed into a white 2.25" x 2.25" square with 0.1" rounded corners. Spacing between multiple modal icons (or modal icons and agency logos) is 0.35". When used in-line between an arrow and a text box, the edge of the modal icon is aligned with the edge of the text box and a 0.375" text wrap buffer is applied to the far side of the icon to separate it from the text.

Modal icons in the wayfinding headers are almost always in a square with rounded corners. Most are typically black-on-white in the wayfinding headers and white-on-black when on the maps. Some exceptions exist for certain point-of-interest icons such as those for "ballpark" (standalone baseball icon, not in a square) and "hospital" (white-on-blue).

AGENCY LOGOS

Sizing

When space allows or site conditions dictate that agency logos be shown beside the modal icons for clarification or additional information (for example, if different transit agencies operate the same mode of transportation but at distinct locations within the hub), then the logos are presented in a format similar to the modal icons.

They are either in white 2.25" x 2.25" squares with rounded corners identical to the modal icons, or they can be placed into rectangles that are 3.6" x 2.25" (with 0.1" rounded corners) instead when there is space available and the logos better fit into a rectangular shape. Rectangular icons, if done in one instance at a hub, should be applied in all of the wayfinding for logos at that hub to maintain consistency. In either case, modal icons should still remain square.

1" to 1.5" spacing is applied between subsets when multiple modal icons with adjacent transit agency logos share a single row in the wayfinding header.

With/Without icons

It is preferred that the modal icon precedes any agency logo shown in order to indicate to passengers what type of transportation services are offered even if they are unfamiliar with the agency logos.

9.4 SIGN ID SYSTEM

The same sign ID system applied on the TIDs should be applied to the kiosk at the hub. See previous “Sign ID system” section under “TIDs.”

9.5 SUB-HEADER

MAP TYPE: STATION: CITY, OTHER SIDE

On the kiosk artwork, the map is placed below the green “Transit Information” banner and is labeled with its type (Station Map, Transit Stops, or Transit Routes), the station name, the city, and a small note that says: “See other side for [Other map type (referring to the back side of the kiosk)].” (See “Typefaces” section below for formatting.)

Typically the Transit Stops map is shown on one side of a kiosk, and the Transit Routes map is shown on the other side.

Routes maps that only show all-day routes should have the following italicized footnote below the bottom right corner of the map:

This map does not show all commuter, express, special event, or all-night routes. Service may vary with time of day or day of week. Service changes may have occurred since printing. Please consult transit agency schedule or contact 511 for more information.

Transit Lines tables on Stops maps should have the following italicized footnote aligned with the information:

Note: Service may vary with time of day or day of week. Please consult transit agency schedule or contact 511 for more information.

TYPEFACES/SIZES

WAYFINDING HEADER TEXT	
[Point-of-Interest]	Frutiger 67 Bold Condensed Typeface size: 150 pt., Leading: 180 pt., Color: White
"Transit Information"	Frutiger 65 Bold Typeface size: 150 pt., Leading: 180 pt., Color: White
SUB-HEADER ELEMENTS/MAP IDENTIFICATION	
[Map Type]	Frutiger 75 Black Typeface size: 36 pt., Color: Black, left justified 0.5" from kiosk edge
[Station Name]	Frutiger 65 Bold Typeface size: 36 pt., Color: Black
[City]	Frutiger 55 Roman Typeface size: 36 pt., Color: Black
"See other side for"	Frutiger 55 Roman Typeface size: 18 pt., Color: Black, right justified 0.5" from kiosk edge
[Other map type]	Frutiger 75 Black Typeface size: 18 pt., Color: Black
SIGN ID AND DATE OF PRINTING	
[Sign ID]	Frutiger 47 Light Condensed Typeface size: 14 pt., Color: Black
[Date of Printing]	Frutiger 47 Light Condensed Typeface size: 12 pt., Color: Black

MAP KEY AND OTHER TEXT INFORMATION

The Map Key and other information included under the sub-header elements are identical to the information presented in the sidebar area on the equivalent TIDs. See "Station Maps," "Transit Stops," and "Transit Routes" sections under "TIDs."

10.0 SITE/LOCATION-SPECIFIC

10.1 ORIENTATION CONSIDERATIONS

YOU ARE HERE VS. DIRECTIONAL PLACEMENT

You Are Here (YAH) stars are placed on the maps at each location of the transit information kiosk as marked by the orange “i” icons. The black triangle of the YAH star should point in the direction the viewer is facing to indicate location and orientation relative to the map elements shown.

Most of the Hub Signage Program maps are oriented with north at the top (as of January 2014), necessitating changing the angle of the You Are Here star to match the orientation of the sign structures on site. While this is simple for editing purposes, it makes comprehension more difficult for people using the maps for wayfinding when the maps are not oriented the way they are facing. In order to better orient the maps to match the viewer’s physical orientation, at some transit hubs the Transit Stops maps have been placed on a north-oriented side of the installed kiosk in order to allow individuals to better locate themselves in context.

The alternative method of orienting Transit Stops and Transit Routes maps prioritizes placing maps on certain faces of the kiosk based on their location relative to the station.

STATION/STOPS VS. ROUTES AS RIDERS ENTER/EXIT THE STATION AREA

The predominant approach to placement of the various map types onto the faces of the kiosk has been based on the following guidelines:

Approaching: Kiosk should show the Station Map or Transit Stops map on the side visible to passengers who are approaching the station.

Exiting: As individuals are leaving the station, the visible kiosk face should display the Transit Stops or Transit Routes map for information on the areas surrounding the station.

10.2 ALIGNMENT OF WAYFINDING TEXT AND ARROWS BASED ON KIOSK PLACEMENT

The arrows and text in the wayfinding headers are left or right justified in each row based on the physical field location of the kiosk and its location relative to the station, the pedestrian pathway, and other points of interest.

Destinations coming up on the left, that require staying to the left in the pathway, or that require crossing the street or turning to the left, are left justified in the kiosk header. Similarly, right-oriented destinations are right justified in the kiosk header. From top to bottom, the points of interest listed in the rows of the kiosk header should be ordered by:

1. Transit connectivity importance.
2. Proximity to the physical location of the sign.

Transit agency logos listed within a row should be ordered

1. By proximity—if there is a noticeable difference in the distances to each agency's stops from the sign location;
2. By level of service—if there is a hierarchy in the service levels among transit agencies operating at the hub; or
3. Alphabetically—if the number of agencies or services make the order created by proximity or level of service appear arbitrary to the viewer.

11.0 PRODUCTION

11.1 NATIVE FILES

Hub Signage Program maps, icons, and other graphics are available to the public for download as editable, native versions, in Adobe InDesign and Adobe Illustrator formats (typically the most recent version); see the Hub Signage Program page on MTC's web site for the current link. Trademarked logos are not included and must be requested from the trademark holder.

11.2 COLORS

Transit Information Displays and Kiosks are typically printed using a large-format inkjet printer. The software used in this process handles the conversion of colors specified using Pantone numbers to the CMYK values needed for inkjet printing. However, if the content is reproduced is handled in a different way (e.g., silkscreen printing or lithography), then care must be taken not to create separate plates for each Pantone color used. The colors must be converted to CMYK values before printing.

11.3 SIZE/MATERIALS

1/16" Makrolon or Lexar polycarbonate sheets are used and cut to size based on how the kiosks are constructed. Typically ranging in width from 20.5" to 22.625" and height from 50" to 58". The ideal size for the kiosks should be constructed to hold a polycarbonate insert that is 21" to 22" x 50".

The use of the curved kiosk structure is optional and any changes should be discussed with MTC staff in order to approve this or any other alternatives to the Standards as written. The important aspect is the information content.

Difficulties with curvature:

1. Plastic covers are not made curved and are bent into place.
To accommodate the curve, 1/16" plastic is used but is more breakable. The curvature puts pressure on the plastic that would not be there if the doors were flat.
2. The curvature skews the appearance of the artwork and makes the information slightly harder to read.

APPENDIX B

CONSTRUCTION DRAWINGS

MARCH 2012



SPONSORED BY:



METROPOLITAN
TRANSPORTATION
COMMISSION

CONSTRUCTION DRAWINGS

These drawings are saved as: AppendixB_032012.pdf

APPENDIX C

STANDARD SPECIFICATIONS

AUGUST 1, 2019

SPONSORED BY:



METROPOLITAN
TRANSPORTATION
COMMISSION

DECORATIVE METAL

SECTION 05 70 00

LAST EDITED AUGUST 1, 2019

**SECTION 05 70 00
DECORATIVE METAL**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Stainless steel composite panels.
- B. Transit information display (TID) and exit directory cases and frames (otherwise known as map, schedule, and advertising cases).
- C. Other decorative metal work.

1.02 RELATED SECTIONS

- A. Welding of stainless steel is specified in Section 05 05 22 - Metal Welding.

1.03 MEASUREMENT AND PAYMENT

- A. General: Measurement and payment for decorative metal work will be either by the lump-sum method or by the unit-price method as determined by the listing of the bid item for post and panel wayfinding units indicated in the Bid Schedule of the Bid Form in accordance with Division 01 – General Requirements provisions regarding price and payment procedures. Prices shall include base plate, anchor bolts, and footing, as applicable to specific installation.
- B. Prototype: Measurement and payment for prototypes will be by the lump-sum method as indicated in the Bid Schedule of the Bid Form in accordance with Division 01 – General Requirements provisions regarding price and payment procedures. If no prototype is required, no payment will be made for the lump sum for the prototype. No other adjustment will be made to the Contract Price.

1.04 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI Z97.1 Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test
- B. ASTM International (ASTM):
 - 1. ASTM A240 Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

2. ASTM A269 Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service
 3. ASTM A312 Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipe
 4. ASTM A480 Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip
 5. ASTM C1048 Specification for Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass
 6. ASTM F593 Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs
 7. ASTM F594 Specification for Stainless Steel Nuts
 8. ASTM F837 Specification for Stainless Steel Socket Head Cap Screws
 9. ASTM F879 Specification for Stainless Steel Button and Flat Countersunk Head Cap Screws
 10. ASTM F880 Specification for Stainless Steel Socket-Set Screws
- C. Code of Federal Regulations (CFR):
1. Title 16, Part 1201, Safety Standard for Architectural Glazing Materials (16 CFR 1201)
- D. Glass Association of North America (FGMA):
1. FGMA Glazing Manual
- E. National Association of Architectural Metal Manufacturers (NAAMM):
1. AMP 500 Metal Finishes Manual
- F. Specialty Steel Industry of North America (SSINA):
1. "Designer Handbook"

1.05 SUBMITTALS

- A. General: Refer to Division 01 – General Requirements provisions regarding submittal procedures, shop drawings, product data and samples.
- B. Shop Drawings: Submit detailed Shop Drawings of decorative metalwork, showing sizes and dimensions, materials, details of fabrication and construction, locations of hardware, anchors, mounting hardware, accessories, and installation details.

- C. Product Data: Submit manufacturers' product data of manufactured items and for miscellaneous hardware items associated with decorative metalwork.
- D. Samples: Submit samples of stainless steel finishes for the different locations. Pipe and tube shall be submitted in 10-inch lengths; sheet shall be submitted in 8-inch by 10-inch size.
- E. Selected decorative metal components shall match the Engineer's control samples in quality of fabrication, joinery, welding, and finish.
- F. Submit structural calculations for freestanding TID cases, including wind loadings prepared by a professional Engineer registered in California and having a record of successful experience providing engineering services for installations similar in design and scope to the work of this Section. Include structural calculations for each unit's anchorage to ground, including anchor bolts, footing, and base plate, as applicable. The pipe-to-base plate weld shall develop the complete strength of the pipe where connected to the plate (such as a properly executed Complete Joint Penetration weld would do).
- G. Mill Test Reports: Submit certified mill test reports of stainless steel materials, covering chemical analysis and physical properties of each heat of steel from which the material for stainless steel will be furnished, in conformance with the hereinafter specified ASTM Specifications.

1.06 QUALITY ASSURANCE

- A. Work Quality:
 - 1. Shop and field work shall be performed by mechanics, crafts persons, artisans, and workers skilled and experienced in the fabrication and installation of the decorative metalwork involved.
 - 2. Stainless steel work shall conform to the quality requirements of the herein referenced
 - 3. Specialty Steel Industry of North America, "Designer Handbook" series standards.
- B. Iron Contamination (Rust): Stainless steel with iron contamination will not be accepted. Dies for forming stainless-steel components shall be stainless steel or chrome-plated to prevent embedment of minute iron particles. All stainless-steel work shall be polished and cleaned after fabrication and installation to prevent rusting susceptibility.
- C. Welds of Stainless Steel: Exposed welds shall be ground smooth and polished to match the adjacent surrounding finish of the stainless steel.
- D. Regulatory Requirements: Glass and glazing shall comply with applicable requirements of the California Building Code, ANSI Z97.1, and 16 CFR 1201.
- E. Contractor's Professional Engineer's Qualifications: Upon the Engineer's request, provide a reference list with client contact information. List shall show that the engineer has a record of successful experience providing engineering services for installations similar in design and scope to the work of this Section.

- F. Prototype: Upon Engineer's request, build prototype or prototypes to demonstrate aesthetic effects and verify and set aesthetics and quality standards for fabrication and installation. Modify prototype and shop drawings as required by Engineer in order to obtain Engineer's approval. Approved prototype may become part of the completed Work with the Engineer's written permission. Either deliver prototype to location indicated by the Engineer or make available for Engineer's review at Contractor or fabricator's facility within 50 miles from the San Francisco Bay or from the project site.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Handle products and materials in accordance with manufacturer's instructions. Store in a dry and secure location, protected against direct sunlight and excessive heat.

1.08 WARRANTY

- A. Provide manufacturer's standard warranty.
- B. Warranty terms: In accordance with the Contract Documents. In no case shall warranty against defects in materials and workmanship be less than one year from date of project acceptance.

1.07 MAINTENANCE TOOLS

- A. Provide a minimum of three keys for each TID to the Engineer.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Stainless Steel Tube or Pipe: Provide stainless steel tube or pipe, where indicated, conforming to ASTM A269, Grade TP316, or ASTM A312, Grade TP316, of diameters and sizes indicated. Provide tube or pipe with a polished finish similar to NAAMM No. 4 stainless steel finish.
- B. Stainless Steel Sheet and Plate: ASTM A240 and ASTM A480, Type 316, of thickness indicated on the Contract Drawings, with ASTM A480 or NAAMM 500, No. 4 stainless steel finish.
- C. Anchor Plates: Provide stainless steel anchor plates conforming to ASTM A240 and ASTM A480, Type 316, with ASTM A480 or NAAMM 500, No. 4 stainless steel finish.

- D. Welding Rod/Electrodes: Welding electrodes and welding rods for stainless steel shall conform to AWS A5.4 and AWS A5.9 as recommended by their manufacturers for the positions and other conditions of actual use. Matching filler metals shall be compatible with the Type 316 or Type 304 stainless steel, as applicable.
- E. Anchors, Fasteners, and Accessories: Provide all required anchors, fasteners, miscellaneous components, and accessories as required for complete and finished decorative metal installations. Bolts, studs, and nuts shall conform to ASTM F593, F594, F837, F879, and F880 as applicable, Type 316. Comply also with applicable requirements of SSINA's "Stainless Steel Fasteners." Anchors and fasteners shall be tamper-resistant where exposed.
1. Self-Tapping Screws, Washers and Shims: Oval head, counter-sunk phillips self-tapping screws, washers, and horseshoe shims shall consist of a 316 stainless steel alloy.
 2. Expansion Bolts: Provide stainless steel expansion type anchors with matching stainless steel bolts or studs with nuts, of sizes as indicated or required to meet installation conditions. Provide stainless steel washers under all bolt heads and nuts. Expansion bolts will not be permitted for use on concrete curbs or along the edge of concrete or a concrete joint.
- F. Grout: As proposed by the Contractor and approved by the Engineer.
- G. Glass: Clear Tempered Glass: ASTM C1048, Type 1 transparent flat, Quality Q3, Kind FT fully tempered, Condition A uncoated, float glass with horizontal tempering.
1. Tempered glass shall bear the manufacturer's identification as to type and thickness. Such identification for glazing shall be permanently etched so as to be visible after glass has been installed.
- H. Glazing Materials: Glazing materials shall conform to applicable requirements of FGMA Glazing Manual.
- I. Provide a ferromagnetic laminate coating bonded to the stainless steel bent plate of the TIDs. The laminate shall serve as the internal backing material for the TIDs.
- J. Install Grip A Strip rail or approved equal in the TID cases to attach and hold the maps firmly inside the TID case. The rail shall be mounted permanently to the TID case using the manufacturer supplied mounting brackets.
- K. Anti-Graffiti Film: Graffitigard 6 mil. protective film as manufactured by Solar Gard or equal. Film shall be optically clear and removable. Film shall act as a sacrificial barrier to protect glass from paint, key scratches, marking, and anti-acid-etching. When vandalized, the film shall be easily removed and replaced.

2.02 ACCESSORIES

- A. Hinge: Stainless steel full length, heavy-duty piano-type, meeting the requirements of ASTM A240 and ASTM A480, Type 316, minimum 14 gage.
- B. Lock: Compression lock, tubular key. Comply with the Engineer's control sample.

2.03 FABRICATION - GENERAL

- A. The transit information display shall be a static, interior and exterior, pole or wall mounted structure with several different possible assembly options including the installation of real-time displays. Refer to the Contract Drawings for details on the different assembly options.
- B. The TID assembly shall incorporate proper venting to allow proper air flow and weep holes with insect screens for proper water drainage. Proper gasketing also shall be incorporated so as to eliminate water entry into cabinet.
- C. Fabricate TIDs to comply with requirements indicated for materials, thickness, finishes, colors, designs, shapes, sizes and details of construction as shown on the Contract Drawings.
- D. TID Locking Mechanism and Keying: TID Locks shall be keyed compression locks with tubular keys; Southco part number E3-26-819-15 (key) and E3-55-52 (lock). Locks on a single unit shall be keyed the same. Other requirements regarding keying shall be as required by the Engineer.
- E. Decorative metalwork shall be fabricated by firms or shops experienced and skilled in the custom fabrication of architectural decorative metalwork. Form and fabricate the work as indicated and as required to meet installation conditions.
- F. Bends in tubes or pipes shall be precision-formed to a smooth continuous radius by skilled workers, true to detail. Butt joints shall have tight-fitting internal pipe sleeve or dowel.
- G. Stainless steel welded connections shall be made in accordance with applicable requirements of AWS D10.4. Welding shall be performed in the shop unless otherwise indicated. Welded joints shall be ground and dressed smooth to match adjacent surfaces and so that the shape and profile of the item welded is maintained and so that the weld seam is invisible in the finished work. Ends shall be closed with matching material, welded, and ground smooth. Welds shall be ground and polished to match NAAMM 500, No. 4 stainless steel finish.
- H. Corners: Where rounding of 90-degree, outside corners are shown on the Contract Drawings, provide one-quarter sphere components for rounding of 90-degree, outside railing corners. Sphere components shall be welded into position, and the weldments shall be ground and dressed smooth so as to be invisible in the finished work.
- I. Decorative metalwork shall be prefabricated and pre assembled in the factory or shop as far as practicable.

- J. All stainless steelwork, after receiving NAAMM 500, No. 4 stainless steel finish, shall receive a final polishing using non-ferrous grit no coarser than 180.
- K. Glazing: Glazing methods shall conform to applicable requirements of FGMA Glazing Manual.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install decorative metalwork as indicated and in accordance with the approved Shop Drawings, using workers skilled and experienced in the installation of the type of work involved.
- B. Install decorative metalwork true and horizontal, perpendicular, or at the required angle, as the case may be, level and square, with angles and edges parallel with related lines of the building or structure.
- C. Field welding, where required, shall conform to requirements specified herein for shop welding under "Fabrication." All welds shall be ground and polished smooth to match adjacent finish surfaces.

3.02 CLEANING OF STAINLESS STEEL

- A. All stainless steelwork shall be cleaned of all dirt, dust, oil and grease, fingerprints, atmospheric and aqueous corrosion, and iron contamination, rinsed with clear water, and then polished before the Engineer's final inspection that establishes Substantial Completion of the Contract.
- B. The cleaning method shall be the mildest treatment necessary for the problem.
- C. Corrosion shall be removed by scouring lightly with an abrasive cleaner, rubbing in the direction of the finish grain of the metal. In cases of extreme discoloration, use scouring sponges or steel wool, made only from stainless steel, and then rinsed thoroughly with clean water.
- D. Iron contamination shall be removed by passivation, a chemical cleaning method involving the use of nitric acid. This cleaning method shall be performed in the shop only, unless no other treatment at the site is successful. Passivation treatment at the site shall be performed under the continuous supervision of the stainless steel fabricator, employing all required safety precautions and protection of adjacent surfaces.
- E. Weldments may require additional fine grinding to remove corrosion or iron contamination if no other cleaning method is successful.
- F. All cleaned and rinsed stainless steelwork shall be dried with clean towels and then polished by buffing. If a dull or satin finish is indicated, then buff only enough to remove any remaining residue.

END OF SECTION 05 70 00

POST AND PANEL WAYFINDING SYSTEM

SECTION 10 14 27

LAST EDITED AUGUST 1, 2019

SECTION 10 14 27
POST AND PANEL WAYFINDING SYSTEM

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Signage and information system (“kiosk”).

1.02 MEASUREMENT AND PROCEDURES

- A. General: Measurement and payment for post and panel wayfinding units will be either by the lump-sum method or by the unit-price method as determined by the listing of the bid item for post and panel wayfinding units indicated in the Bid Schedule of the Bid Form in accordance with Division 01 – General Requirements provisions regarding price and payment procedures. Prices shall include base plate, anchor bolts, and footing, as applicable to specific installation.
- B. Prototype: Measurement and payment for post and panel wayfinding prototype will be by the lump-sum method as indicated in the Bid Schedule of the Bid Form in accordance with Division 01 – General Requirements provisions regarding price and payment procedures. If no prototype is required, no payment will be made for the lump sum for the prototype. No other adjustment will be made to the Contract Price.

1.03 SUBMITTALS

- A. General: Refer to Division 01 – General Requirements provisions regarding submittal procedures, shop drawings, product data and samples.
- B. Submit shop drawings and manufacturer’s technical literature. Include manufacturer’s toll-free telephone number for product support.
- C. Submit half-size laser print outs of graphics for each kiosk face for approval.
- D. Submit structural calculations including wind loadings prepared by a professional Engineer registered in California and having a record of successful experience providing engineering services for installations similar in design and scope to the work of this Section. Include structural calculations for each unit’s anchorage to ground including anchor bolts, footing, and base plate, as applicable. The pipe-to-base plate weld shall develop the complete strength of the pipe where connected to the plate (such as a properly executed Complete Joint Penetration weld would do).

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Minimum 8 years' experience in the manufacture of signage and information systems.
 - 2. Upon Engineer's request, provide reference list and photos of at least 10 public or commercial exterior projects currently using signage and information systems supplied by the manufacturer.
- B. Contractor's Professional Engineer's Qualifications: Upon the Engineer's request, provide a reference list with client contact information. List shall show that the engineer has a record of successful experience providing engineering services for installations similar in design and scope to the work of this Section.
- C. Prototype: Upon Engineer's request, build prototype to demonstrate aesthetic effects and verify and set quality standards for fabrication and installation. Modify prototype and shop drawings as required by Engineer in order to obtain Engineer's approval. Approved prototype may become part of the completed Work with the Engineer's written permission. Either deliver prototype to location indicated by the Engineer or make available for Engineer's review at Contractor or fabricator's facility within 50 miles from the San Francisco Bay or from the project site.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Handle products in accordance with manufacturer's instructions. Store in dry, secure location, protected against direct sunlight and excessive heat.

1.06 WARRANTY

- A. Provide manufacturer's standard warranty.
- B. Warranty terms: In accordance with the Contract Documents. In no case shall warranty against defects in materials and workmanship be less than one year from date of project acceptance.

1.07 MAINTENANCE TOOLS

- A. Provide a minimum of three keys for each kiosk to the Engineer.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Post-mounted double-sided signage and information system with signage elements consisting of curved face panels attached to a rigid internal structure.
 - 1. Suitable for all-weather outdoor use.
 - 2. At Contractor's option, kiosk may be fabricated from stainless steel in lieu of aluminum shown on the Contract Drawings. Where stainless steel is utilized in lieu of aluminum for the exterior of kiosk, stainless steel shall be Type 316.
 - 3. Provide graphics on both sides of unit. Refer to Article entitled "Artwork" herein.
 - a. Provide screen-printed graphics and applied vinyl graphics at the top portion of both sides of the exterior of the unit. Other methods of applying graphics which meet or exceed the specified method in weather, chemical, graffiti, and ultraviolet light resistance may be acceptable to the Engineer.
 - b. Graphics sheet insert for the inside of unit behind each window will be furnished and installed by the Engineer or others.
 - 4. Provide cutout with .125" clear lexan window material attached to door panel with studs and nuts, and insert carrier for graphics display on each side of each signage assembly.
 - a. Panels with window cutouts shall include continuous stainless steel hinges and locking mechanisms for access to interior.
 - b. Window shall be retained in window opening using slots provided in the curved face panel's edge profile or by other means per approved shop drawings.
 - c. Provide minimum 0.06 inch thick aluminum graphic panel, powder coated white to accept graphic sheet insert.
 - d. Locking Mechanism and Keying: Locks shall be keyed compression locks with tubular keys; Southco part number E3-26-819-15 (key) and E3-55-52 (lock). Locks on a single unit shall be keyed the same. Other requirements regarding keying shall be as required by the Engineer.
 - 5. Provide Type 316 stainless steel base plates and anchor bolts. Pole welded to base plate shall be Type 316 stainless steel.
- B. Curved Face Panels:
 - 1. Material: Aluminum, 0.125 inch minimum thickness.
 - 2. Provide curved face panels. Edges shall be internal and completely concealed from view in the assembled signage unit.

C. Internal Structure and End Plates:

1. Provide an internal structure sufficient to support sides of kiosk and end and face panels and to ensure that kiosk unit remains centered and secured to pole. Internal structure shall be one piece extrusion or welded module.
 2. Center Support Plate or Plates, as Applicable: Aluminum plate, minimum 0.25 inch thickness.
 3. End plates: Aluminum plate, thickness as determined by structural design.
- D. Bird Control Wire: Bird barrier shall be designed for all bird species consisting of wire spikes on a base strip, 4 inches high, 4 inches wide, consisting of no less than 120 wire points per foot, providing full 180-degree wire coverage. Wire Spikes: Stainless steel, 0.041 inch diameter, full-hard spring temper, 250,000 lbs./in. tensile strength. Base Strip: Stainless steel, 0.25 inch wide x 0.02 inch thick, fully annealed for flexibility and surface shape memory. Similar stainless steel systems may be acceptable subject to the approval of the Engineer.
- E. Weatherproofing: Provide gasketing for exterior use. Provide for ventilation of interior, and provide weep holes and vents with insect screens.
- F. Security: Provide tamper-resistant stainless steel security screws to prevent unauthorized removal of curved face panels. Security screws shall be countersunk flush with the frame's formed or fabricated edge. Welded construction may be utilized in lieu of external security fasteners.
- G. Finish of Exposed Surfaces Including Curved Face Panels, Sides, End Plates, Mounting Pole, and Base Plate: Manufacturer's graffiti resistant polyester powder coat with anti-graffiti coating.
1. Colors: As indicated in the Contract Documents.

2.02 FABRICATION

- A. Factory assemble units and apply finishes and graphics in accordance with manufacturer's standards and approved shop drawings.
- B. Weld post to base plate. Base plate shall be perpendicular to post within plus or minus one degree.

2.03 ARTWORK

- A. Unless otherwise specified in the Contract Specifications, the Engineer will furnish electronic files showing the required logos, Typefaces, and layout of typical sign for use by the Contractor. The Contractor shall furnish graphic design services to design each sign face. The software of the artwork file will be as designated in the Contract Specifications.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that substrates are stable and capable of supporting the weight of signage units.
- B. Verify that substrates have been adequately prepared to securely anchor signage units.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Protect surrounding finishes and fixtures from damage by work of this Section.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's installation instructions.
- B. Install in accordance the details shown in the Contract Drawings and approved shop drawings.

3.04 CLEANING AND PROTECTION

- A. Clean exposed surfaces in accordance with manufacturer's instructions.
- B. Protect exposed surfaces from damage by subsequent construction.

END OF SECTION 10 14 27

ILLUMINATED CABINET SIGNAGE

SECTION 10 14 33

LAST EDITED AUGUST 1, 2019

SECTION 10 14 33
ILLUMINATED CABINET SIGNAGE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Exterior and interior illuminated overhead hanging and wall-mounted signs.
- B. Exterior and interior non-illuminated wall-mounted and signs post-mounted.

1.02 MEASUREMENT AND PAYMENT

- A. Separate measurement and payment will not be made for work required under this Section. All costs in connection with the work specified herein will be considered to be included with the related item of work in the Bid Schedule of the Bid Form, or incidental to the Work.
- B. Prototype: Measurement and payment for illuminated cabinet prototype will be by the each as indicated in the Bid Schedule of the Bid Form in accordance with Division 01 – General Requirements provisions regarding price and payment procedures. If no prototypes required, no payment will be made for prototypes. No other adjustment will be made to the Contract Price.

1.03 REFERENCES

- A. The applicable date of reference standards shall be understood to be the date of the Invitation to Bid.
- B. American Architectural Manufacturers Association (AAMA):
 - 1. AAMA 2603 Voluntary Specification and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
- C. American Society for Testing and Materials (ASTM):
 - 1. ASTM B123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - 2. ASTM B153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - 3. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
 - 4. ASTM B221 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
- D. Americans with Disabilities Act (ADA)

- E. Association Connection Electronic Industries (IPC):
 - 1. IPC 2221 Generic Standard on Printed Board Design.
 - 2. IPC 2222 Sectional Design Standard for Rigid Organic Printed Boards.
- F. Federal Specifications:
 - 1. QQ-S-571F Solder, Electronic: Fluxed and Non-Fluxed Solders
- G. National Electrical Manufacturers Association (NEMA):
 - 1. LI-1 Industrial Laminated Thermosetting Products.
- H. National Fire Protection Association (NFPA):
 - 1. NFPA 70 National Electrical Code (NEC).
- I. Society For Protective Coatings (SSPC):
 - 1. SSPC SP6/NACE No. 3 Commercial Blast Cleaning.

1.04 SUBMITTALS

- A. General: Refer to Division 01 – General Requirements provisions regarding submittal procedures, shop drawings, product data and samples.
- B. Product Data: For each type of product indicated.
- C. Shop Drawings: Show fabrication and installation details for signs and mounting devices.
 - 1. Show sign mounting heights, materials, locations of supports, mountings and accessories.
 - 2. Provide message list, type styles, graphic elements, and layout for each sign.
 - 3. Submit half-size laser print outs of each sign face for approval.
 - 4. Wiring Diagrams: Power and control wiring.
- D. Samples: Submit the following samples for verification:
 - 1. Corner of aluminum frame showing mitered and welded corner with finish, each leg of corner a minimum of 8 inches long.
 - 2. Acrylic sheet, 8 by 10 inches.
 - 3. Acrylic sheet with translucent and opaque finish; for both interior and exterior, as applicable, 8 by 10 inches.
 - 4. Samples of translucent film in each color required.

- E. Calculations: Submit structural calculations including wind and vibration loadings prepared by a professional Engineer registered in California with a record of successful experience providing engineering services for installations similar in design and scope to the work of this Section. Include structural calculations for unit's anchorage.
- F. Prototype: As many as one prototype for each sign type, upon Engineer's request.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelines and CBC.
- B. Electrical Components, Devices and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Contractor's Professional Engineer's Qualifications: Upon the Engineer's request, provide a reference list with client contact information. List shall show that the engineer has a record of successful experience providing engineering services for installations similar in design and scope to the work of this Section.
- D. Fabricator Qualifications
 - 1. Minimum 5 years of experience in the fabrication of illuminated signage.
 - 2. Upon Engineer's request, provide reference list and photos of at least 10 public or commercial projects currently using illuminated signage made by the fabricator.
- E. Powder-Coating Applicator Qualifications: A firm experienced in successfully applying powder coatings of type indicated and employing competent control personnel to conduct continuing, effective quality-control program to ensure compliance with requirements.
- F. Prototype: The Engineer at the Engineer's discretion may require prototypes of any or all sign types. Upon Engineer's request, build prototype of each specific sign type requested to demonstrate aesthetic effects and verify and set aesthetic and quality standards for fabrication and installation. Modify prototype and shop drawings as required by Engineer in order to obtain Engineer's approval. Approved prototype may become part of the completed Work with the Engineer's written permission. Either deliver prototype to location indicated by the Engineer or make available it for Engineer's review at Contractor or fabricator's facility within 50 miles from the San Francisco Bay or from the project site.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, and handle materials in accordance with manufacturer's instructions. Store in dry, secure location, protected against direct sunlight and excessive heat.

1.07 WARRANTY

- A. Provide manufacturer's standard warranty.
- B. Warranty terms: In accordance with the Contract Documents. In no case shall warranty against defects in materials and workmanship be less than one year from date of project acceptance.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Aluminum Sheet and Plate: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 5005-H32.
- B. Aluminum Extrusions: ASTM B 221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 6063-T5.
- C. Acrylic Sheet: Acrylite GP 015-2 P-95, translucent white, as manufactured by Evonik Industries, or equal. UV resistant and light diffusing sheet.
- D. Applied Vinyl: 3M Scotchcal Translucent Graphic Film Series 3630 or equal, cast vinyl film for both interior and exterior use for internally illuminated signs approved by film manufacturer for application to substrate. Film shall have matte surface finish with uniform color in both reflected and transmitted light; clear, permanent, pressure-sensitive adhesive; and a translucent synthetic liner. Thickness of film without adhesive: 2 mils. Overall thickness of film: 3-4 mils. Tensile strength: 5 pounds/inch at 73 degrees F. Chemical resistance: Resists mild alkalis, mild acids, and salt. Refer to Article entitled "Cabinet Signs" in this Section for use of this film.
- E. Applied Vinyl with Protective Top Coat: 3M Scotchcal Translucent Graphic Film Series 3632 GPS or equal. For detailed specifications for this film, refer to "Applied Vinyl" herein for Series 3630 with the addition of protective top coat. Low-sheen finish. Refer to Article entitled "Cabinet Signs" in this Section for use of this film.
- F. Paint: Matthews Acrylic Polyurethane, or equal. Multi-component opaque paint material consisting of pigmented base and activator. UV resistant, satin sheen. Use primer and undercoats as recommended in writing by paint manufacturer for specific substrate.
- G. Gaskets and Seals: Provide neoprene gaskets as indicated on the Contract Drawings.
- H. Bird Control Components:

1. Posts, springs, and accessories fabricated from Type 316 stainless steel.
2. Wire: Braided stainless steel wire coated with ultraviolet stabilized nylon coating.

2.02 CABINET SIGNS

- A. Brackets: Fabricate brackets and fittings for wall-mounted signs from extruded aluminum to suit cabinet sign construction and mounting conditions indicated. Fabricate pendants for overhead-mounted signs as indicated on the Contract Drawings. Factory paint or powder coat brackets in color indicated. Powder coat pendants and related hardware as indicated on the Contract Drawings.
- B. Cabinet Sign Frames: Extruded-Aluminum Frames: Mitered with concealed anchors and welded.
- C. Panel Material: White translucent acrylic sheet.
- D. Artwork Materials:
 1. Interior Sign Panels: Translucent and opaque areas of interior sign panels shall be applied vinyl sheet.
 2. Exterior Sign Panels: Opaque areas of exterior sign panels shall be painted.
 3. Translucent portions of exterior signs shall be vinyl sheet with protective top coat.

2.03 ACCESSORIES

- A. Anchors and Inserts: Provide stainless steel anchorages. Refer to Contract Drawings for specific anchors.
- B. Design and selection of anchors for overhead applications and subjected to sustained tensile loads where failure of the anchor could result in risk to life or limb shall comply with the following requirements: Such anchors shall be embedded in confined concrete. Length of embedment in unconfined concrete shall not be considered effective embedment length. Use of adhesive anchors is prohibited.

2.04 ELECTRICAL

- A. The LED Fixture shall consist of a LED Luminaire Assembly, LED Driver, and mounting hardware.
 1. Light Fixtures: JT SSC Series LED Modules JT-SLS065W-0.7, or equal, with the following as described below:
 - a. The LED shall be rated 73 Lumen per watt. 7000mcd *3 (millicandelas), Beam angle: 120 degrees.
 - b. Correlated Color Temperature (CCT) shall be minimum 4000K.
 - c. LED Modules shall be waterproof design, IP65.
 - d. A minimum of 50,000 operating hours before reaching the L70 lumen output degradations point without catastrophic failure.

- e. Shall be UL recognized.
 - f. Fastening: Peel and stick tape on back of each module and industrial silicone on sides as indicated on the Contract Drawings. LED modules shall have 3M VHB tape, or equal, as indicated on the Contract Drawings.
2. LED Low Voltage Power Supply: France LED-1260PS, or equal with the following features:
- a. Operating input voltage: 120VAC-277VAC ($\pm 10\%$)
 - b. Operating output voltage: 12 VDC, 5 Amps, 60 Watts
 - c. Operating temperature: -40°C to 60°C
 - d. Shall have IP67 rating for Wet, Damp or Dry location use.
 - e. Shall be UL recognized.
 - f. Warranty: 5 years
 - g. Size as needed to fit sign enclosure.
- B. Complete Sign Cabinets: Sign cabinets shall be UL labeled in accordance with UL 48, 15th edition.

2.05 FABRICATION

- A. General: Provide Signs of configurations indicated.
- 1. Welded Connections: Comply with AWS standards for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of exposed side. Clean exposed welded surfaces of welding flux and dress exposed and contact surfaces.
 - 2. Mill joints to tight, hairline fit. Form joints exposed to exclude water penetration.
 - 3. Form joints to eliminate light leaks. Provide gasketing and seals where indicated on the Contract Drawings and as required to ensure weather-tight assembly.
 - 4. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.
- B. Shop assemble units and apply finishes and graphics in accordance with the Contract Drawings, manufacturer's standards and approved shop drawings.

2.06 ARTWORK

- A. Unless otherwise specified in the Contract Specifications, the Engineer will furnish electronic files showing the required logos, Typefaces, and layout of typical sign for use by the Contractor. The Contractor shall furnish graphic layout services to layout each sign face.

2.07 ALUMINUM FINISHES

- A. Paint or powder-coat finish, at fabricator's option.
- B. Paint Finish: Acrylic polyurethane paint as specified herein.
- C. Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
- D. Color and Gloss:
 - 1. Typical: Black, satin gloss.
 - 2. Interior of Box: White, reflective.

2.08 STEEL FINISHES

- A. Galvanizing: Hot-dip galvanize products made from rolled, pressed, and forged steel shapes, castings, plates, bars, and strips indicated to be galvanized to comply with ASTM A 123.
 - 1. Hot-dip galvanize steel and iron hardware indicated to be galvanized to comply with ASTM A 153.
 - 2. Do not quench or apply post-galvanizing treatments that might interfere with paint adhesion.
- B. Powder-Coat Finish: Prepare, treat, and coat non-galvanized ferrous metal to comply with resin manufacturer's written instructions and as follows:
 - 1. Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 2. Apply thermosetting polyester or acrylic urethane powder coating with cured-film thickness not less than 1.5 mils or resin manufacturer's recommended thickness, whichever is greater.
 - 3. Color and Sheen: Black, satin.
- C. Powder-Coat Finish: Prepare, treat, and coat galvanized metal to comply with resin manufacturer's written instructions and as follows:
 - 1. Prepare galvanized metal by thoroughly removing grease, dirt, oil, flux, and other foreign matter.
 - 2. Treat prepared metal with zinc-phosphate pretreatment, rinse, and seal surfaces.
 - 3. Apply thermosetting polyester or acrylic urethane powder coating with cured-film thickness not less than 1.5 mils or resin manufacturer's recommended thickness, whichever is greater.
 - 4. Color and Sheen: Black, satin.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that substrates are stable and capable of supporting the weight of signage units.
- B. Verify that substrates have been adequately prepared to securely anchor signage units.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Protect surrounding finishes and fixtures from damage by work of this Section.

3.03 INSTALLATION

- A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions and the approved shop drawings.
- B. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.
- C. Bracket-Mounted Signs: Provide brackets, fittings, and hardware for mounting signs that project from walls and are suspended from ceilings. Attach brackets and fittings securely to walls and ceilings with concealed fasteners and anchoring devices to comply with Contract Drawings and the approved shop drawings.
- D. Connect exit signage lighting to emergency power circuit.

3.04 CLEANING AND PROTECTION

- A. Clean exposed surfaces in accordance with manufacturer's instructions.

END OF SECTION 10 14 33

REAL-TIME INFORMATION DISPLAY

SECTION 10 14 65

LAST EDITED AUGUST 1, 2019

10 14 65
REAL-TIME INFORMATION DISPLAY

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Real-Time Information Displays assemblies consist of a monitor; a controller (computer); and an enclosure. The work also includes electrical work and data wiring.

1.02 MEASUREMENT AND PAYMENT

- A. Separate measurement and payment will not be made for work required under this Section. All costs in connection with the work specified herein will be considered to be included with the related item of work in the bid schedule of the bid form, or incidental to the work.

1.03 REFERENCES

- A. Regional Real-Time Signs Requirements and Specifications, included in the Appendices of the Metropolitan Transportation Commission (MTC) Regional Transit Wayfinding Guidelines and Standards, bound in the Contract Drawings. It shall be understood that the requirements listed under "Considerations" as optional shall be mandatory for the Work of this Contract. Referred to herein as the Regional Real-Time Sign Specs.
- B. The applicable date of reference standards shall be understood to be the date of the Invitation to Bid.
- C. American Society for Testing and Materials (ASTM):
 - 1. ASTM B123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 2. ASTM B153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- D. National Fire Protection Association (NFPA):
 - 1. NFPA 70 National Electrical Code (NEC).
- E. Society For Protective Coatings (SSPC):
 - 1. SSPC SP6/NACE No. 3 Commercial Blast Cleaning.

1.04 SUBMITTALS

- A. General: Refer to Division 01 – General Requirements provisions regarding submittal procedures, shop drawings, product data and samples.
- B. Product Data: For each type of product.
- C. Shop Drawings: Show fabrication and installation details including mounting devices.
 - 1. Show mounting heights, locations of supports, and accessories.
 - 2. Wiring Diagrams: Power, control, and data (communications) wiring.
- D. Manufacturer Information:
 - 1. Provide overview literature describing manufacturer's overall scope of products and manufacturing capabilities.
 - 2. Provide URL for manufacturer's web site; web site must provide access to technical data, images and general product information.
 - 3. Provide manufacturer's toll-free telephone number for product support.
 - 4. Provide complete list of materials proposed for use, including manufacturer's catalog number and description for each product in typewritten form. Obtain Engineer's approval of materials before proceeding with fabrication.
- E. Calculations: Submit structural calculations including wind and vibration loadings prepared by a professional Engineer registered in California with a record of successful experience providing engineering services for installations similar in design and scope to the work of this Section. Include structural calculations for anchorage.

1.05 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Fabricator Qualifications
 - 1. Minimum 5 years' experience in the fabrication of monitors of similar size and capabilities.
 - 2. Upon Engineer's request, provide reference list and photos of at least 10 public or commercial projects currently using similar monitors made by the fabricator.

- C. Powder-Coating Applicator Qualifications: A firm experienced in successfully applying powder coatings of type indicated and employing competent control personnel to conduct continuing, effective quality-control program to ensure compliance with requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, and handle materials in accordance with the manufacturer's instructions. Store in dry, secure location, protected against direct sunlight and excessive heat.

PART 2 - PRODUCTS

2.01 PRODUCTS

- A. General: In addition to the requirements specified herein, the assemblies shall be in accordance with the requirements specified in the Regional Real-Time Sign Specs.
- B. Real-Time Information Display assemblies shall be able to receive and display hub specific real-time information regarding transit arrivals. Such information consists of a web page assigned to the specific hub and transmitted via the internet. Simply, the display is a large screen monitor connected to a controller that exhibits a specific web page.
- C. Controller: The controller shall be a personal computer (PC) which includes an internet connection and shall be able to launch and run a standard web browser such as Internet Explorer. Provide controller complete with standard web browser. In lieu of a separate PC, the controller may be integrated with the monitor as a single unit subject to the approval of the Engineer.
- D. Enclosure: Refer to the Contract-specific and Standard Drawings. The enclosure shall be selected for the specific locations in accordance with the requirements specified in the Regional Real-Time Sign Specs. The screen and controller shall be contained in a single stainless steel housing and anti-glare reflective protection for the screen. Where screen is recessed in wall panel, controller may be in a separate housing providing the same rating as the screen. The housing shall meet the following minimum specifications:
 - 1. Integrated 120V power source for both screen and sign controller. If power source is not within 5 feet of the screen and sign controller, an in-line cut-off (disconnect) switch shall be furnished and installed.
 - 2. Stainless steel shall conform to material requirements specified in Section 05 70 00, Decorative Metal.
 - 3. The screen and sign controller enclosures shall be IP65-rated for exterior installations and IP 54-rated for interior installations except as otherwise approved by the Engineer.

4. Outdoor rated enclosures shall have thermostatically controlled ventilation fan, heater, and filter system to maintain the monitor within its rated operating temperature or Air Conditioning (AC) units to maintain proper operating temperature for the real-time display sign and controller, except as otherwise approved by the Engineer.
5. Anti-reflective tempered or laminated glass; screen glass to match display monitor's viewing area.

2.02 ENCLOSURE MOUNTING AND ACCESSORIES

- A. Brackets, Anchors, and Inserts: Fabricate from stainless steel to suit location and mounting conditions. Where exposed to view, stainless steel shall be Type 316 with brushed finish.

2.03 ELECTRICAL

- A. Contractor shall furnish and install conduit, wiring, and other electrical components as necessary to provide power and communications connections for complete and functioning real-time display system.
- B. Refer to Division 26, Electrical, for related requirements.

2.04 FABRICATION

- A. General: Provide assemblies of configurations indicated.
 1. Welded Connections: Comply with AWS standards for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of exposed side. Clean exposed welded surfaces of welding flux and dress exposed and contact surfaces.
 2. Mill joints to tight, hairline fit. Form joints exposed to exclude water penetration.
 3. Form joints to eliminate light leaks. Provide gasketing and seals as required to ensure weather-tight assembly.
 4. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.
- B. Shop assemble units and apply finishes and graphics in accordance with the Contract Drawings, manufacturer's standards and approved shop drawings.

2.05 STEEL FINISHES

- A. Galvanizing: Hot-dip galvanize products made from rolled, pressed, and forged steel shapes, castings, plates, bars, and strips indicated to be galvanized to comply with ASTM A123.
 - 1. Hot-dip galvanize steel and iron hardware indicated to be galvanized to comply with ASTM A153.
 - 2. Do not quench or apply post-galvanizing treatments that might interfere with paint adhesion.
- B. Powder-Coat Finish on Non-galvanized Ferrous Metal: Prepare, treat, and coat metal to comply with resin manufacturer's written instructions and as follows:
 - 1. Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 2. Apply thermosetting polyester or acrylic urethane powder coating with cured-film thickness not less than 1.5 mils or resin manufacturer's recommended thickness, whichever is greater.
- C. Powder-Coat Finish on Galvanized Metal: Prepare, treat, and coat metal to comply with resin manufacturer's written instructions and as follows:
 - 1. Prepare galvanized metal by thoroughly removing grease, dirt, oil, flux, and other foreign matter.
 - 2. Treat prepared metal with zinc-phosphate pretreatment, rinse, and seal surfaces.
 - 3. Apply thermosetting polyester or acrylic urethane powder coating with cured-film thickness not less than 1.5 mils or resin manufacturer's recommended thickness, whichever is greater.
- D. Color and Sheen: Select color to suit specific locations subject to the approval of the Engineer; typically, black. Sheen: satin.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that substrates are stable and capable of supporting the weight of units.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Protect surrounding finishes and fixtures from damage by work of this Section.

3.03 INSTALLATION

- A. Locate components in accordance with approved plans and complying with manufacturer's written instructions, as applicable.
- B. Install monitors and enclosures level and plumb, with surfaces free of distortion and other defects in appearance.
- C. Attach brackets and fittings securely with concealed fasteners and anchoring devices in accordance with the approved shop drawings.
- D. Complete connections to internet. Demonstrate that each assembly including web browser is functioning and connected to the internet, and that all pop-ups, screen savers and automated scripts have been disabled.
- E. Verify that each assembly has been tested per the Real-Time Display Test Plan as outlined in the Regional Real-Time Sign Specs.

3.04 CLEANING AND PROTECTION

- A. Clean exposed surfaces in accordance with manufacturer's instructions.

END OF SECTION 10 14 65

APPENDIX D

REGIONAL REAL-TIME ELECTRONIC TRANSIT INFORMATION DISPLAYS (ETIDS) REQUIREMENTS & SPECIFICATIONS

VERSION 6.0—AUGUST 1, 2019

SPONSORED BY:



METROPOLITAN
TRANSPORTATION
COMMISSION

**REGIONAL REAL-TIME SIGNS REQUIREMENTS & SPECIFICATIONS
VERSION 6.0**

DOCUMENT DESCRIPTION	DATE	VERSION
FIRST RELEASE OF THE PHYSICAL REQUIREMENTS AND SPECIFICATIONS	2/7/2007	1.0
DRAFT UPDATE TO THE PHYSICAL REQUIREMENTS AND SPECIFICATIONS	2/26/2010	2.0
SECOND DRAFT UPDATE OF THE PHYSICAL REQUIREMENTS AND SPECIFICATIONS	4/1/2010	3.0
THIRD DRAFT UPDATE OF THE REQUIREMENTS AND SPECIFICATIONS	5/4/2010	4.0
SECOND RELEASE OF THE PHYSICAL REQUIREMENTS AND SPECIFICATIONS	8/26/2010	4.1
FOURTH DRAFT UPDATE OF THE REQUIREMENTS AND SPECIFICATIONS	8/4/2011	4.2
SECOND RELEASE OF THE PHYSICAL REQUIREMENTS AND SPECIFICATIONS	8/26/2010	4.1
UPDATE FOR REGIONAL TRANSIT WAYFINDING GUIDELINES & STANDARDS 3.0	MAY 2015	5.0
SECOND RELEASE OF THE PHYSICAL REQUIREMENTS AND SPECIFICATIONS	8/26/2010	4.1

PURPOSE

The purpose of this document is to provide technical information to assist transit agencies in making the best fit choices when purchasing electronic Transit Information Displays (eTIDs). It includes the following:

- Background information on the Regional Real-Time Transit Information System and how information is provided to eTIDs.
- System Design considerations for eTIDs at particular locations.
- eTID performance requirements.

Additional eTID specifications and testing procedures are included in Appendices.

BACKGROUND

MTC/511 transit departure predictions, scheduled departure information, and service alerts. This information is then made available on the phone and the 511 website. For on-site usage, MTC disseminates this information to a network of displays located at regional transit hubs known as Electronic Transit Information Displays (eTIDs).

MTC manages the content and format of the messages displayed on the eTIDs to provide useful and consistent information to Bay Area transit users. MTC, with input from the transit agencies, developed a set of principles to ensure that the signs display the proper information in the agreed upon format.

The solution is to use the TransitScreen SAAS, wherein 511 sends the prediction data via API to TransitScreen, who manages separate web pages with unique URLs, containing transit information for each eTID at each transit hub. TransitScreen develops a specific webpage for each eTID to be displayed. In essence, the eTIDs are simply large screen monitors connected to a remote computer (TransitScreen server). The local controller at each eTID is a computer (PC) that has a sole purpose of rendering the web page that is retrieved over the Internet from the remote TransitScreen server. The local controller is either integrated in the eTID unit (such as Smart TV), or is a separate stand-alone unit connected to the eTID.

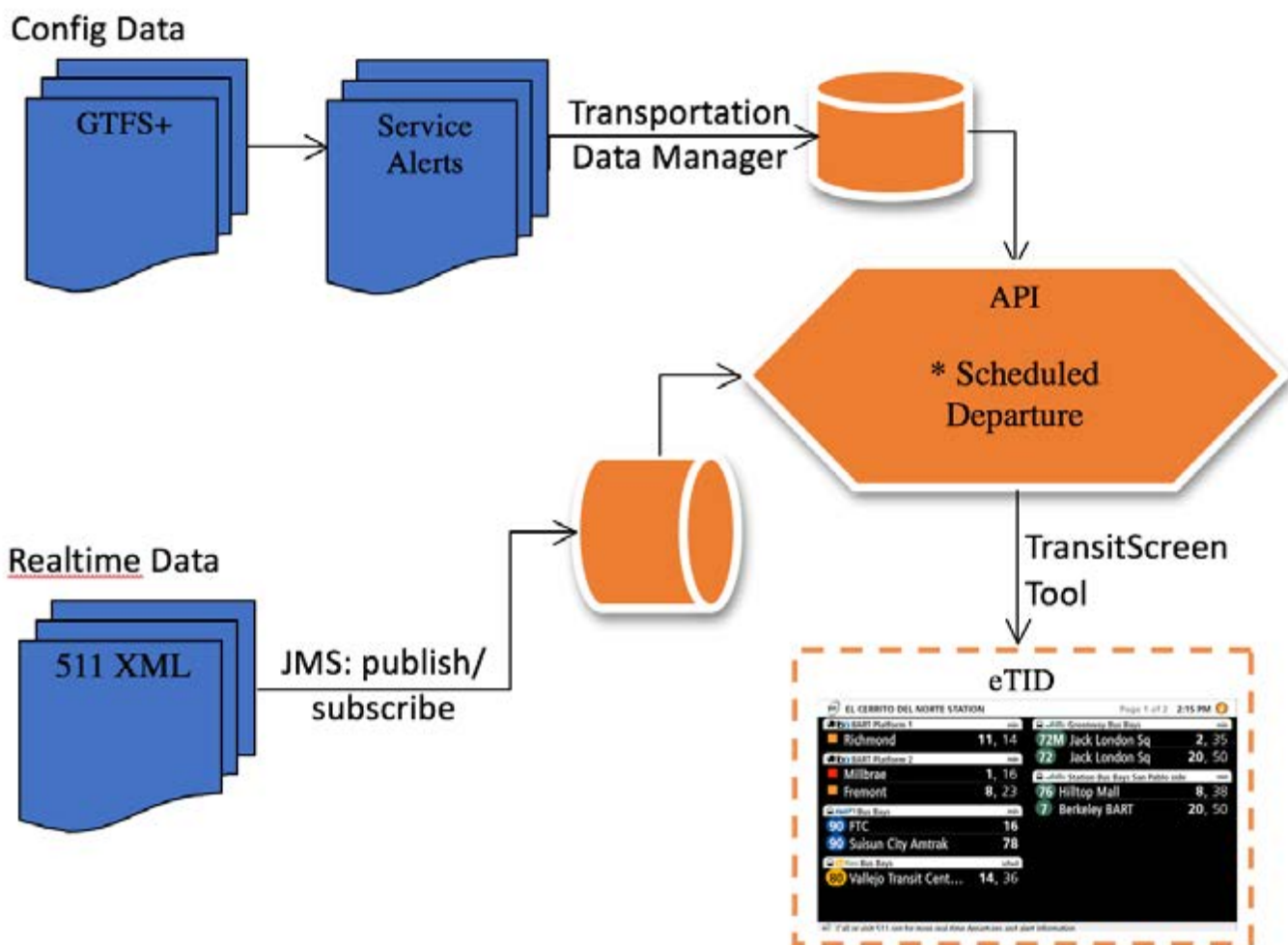
The TransitScreen solution allows configurability to allow the maximum control over the content and format of the transit information. These configurations include, but are not be limited to:

- For each transit hub: Agency, route and direction, stop name to be displayed, and the arrangement of these stops and routes.
- For the overall system: font, number of predictions per line, colors, display time, page number when alternating pages are used, how far into the future must departure times be for display, service alerts, timeout values, and error messages.

Some of the benefits of this solution include:

- Reduction of latency: Since there is no processing of data at the transit hubs, data on the signs will be updated as often as the web pages are refreshed.

The following figure illustrates a high level concept of the eTID system.



3. SYSTEM DESIGN CONSIDERATIONS

The following are specification items that should be considered by the agency based on the specific situations at each hub and the locations for the eTIDS.

3.1 INTERNET AND NETWORK CONNECTIVITY

Information is provided to eTIDs over the internet and each eTID must have a Network Interface Card (NIC) for network connectivity. In addition, it is recommended that eTID be capable of wireless connectivity (802.11) where applicable. This is essential for those hubs that do not have a wired network environment and thus the most practical means of a networked connection to the Internet connection is using wireless connectivity. Communications performance (e.g., bandwidth, latency, data drops) of wireless repeaters and wireless routers should be verified prior to installation.

The eTIDs in a specific hub can be networked together and utilize a single Internet connection. It is advisable for all of the regional eTIDs within a hub to be networked together in order to have a single point of communications to the

511 system, in order to reduce communications costs to eTIDs operators.

The internet connection used for eTIDs shall provide at least 384 kilobits per second (Kbps) of bandwidth. This internet connection and minimum bandwidth shall be dedicated for up to two (2) eTID units and no other uses will be allowed for that specific internet connection.

3.2 SIGN CONTROLLER AND DISPLAY CONSTRUCTION

It is preferred that the Sign Controller and the Monitor be constructed as a single unit. If the Sign Controller and the Monitor are separated, the distance between the monitor and the sign controller should be 10 feet or less. This distance takes into account all of the cable routing distance including twists and bends which may yield and final video cable length can be up to 15 feet or even slightly more.

Specialized video cables can be used for longer cable lengths. Using longer specialized video cables may require signal converters at each end of the cable.

The cable that connects the monitor with the sign controller should be a high bandwidth, shielded cable capable of carrying the video signals for the pixel resolution (e.g., VGA, Wide XGA) of the proposed display/monitor.

3.3 ANTI-GLARE

Anti-glare screen elements should be provided for those hubs that will have eTIDs subject to indirect lighting or sunlight where the glare will have visual impacts to reading the display contents.

In siting and installing eTIDs, avoid locations that will receive direct sunlight. If unavoidable, mitigate placement with visor or other screening hardware.

3.4 SEALED ENCLOSURES

Depending on the specific location and environmental conditions of the area where the eTIDs will be installed, there will be different recommendations for providing a sealed enclosure to protect the real-time display. The following scenarios describe the various conditions in which the eTIDs could be installed. Included with the descriptions are the sealed enclosure recommendations for the eTIDs under each scenario. Each IP-rated enclosure is sealed and includes a built-in cooling unit. Sections 4.1.1 and 4.1.2 describe the enclosure types in greater detail.

TABLE 1: INSTALLATION SCENARIOS FOR ETIDS

SCENARIO	TYPE	DESCRIPTION	RECOMMENDED MINIMUM ENCLOSURE
A	Outdoors	The real-time display is installed within an area subject to direct exposure to sunlight and the outside elements including rain, wind, dust, moisture. Temperature conditions can reach in excess of 100 degrees Fahrenheit (38 degrees Celsius).	IP 65
B	Outdoors	The real-time display is installed within a non-sealed (i.e., not IP rated) cabinet, where the cabinet is subject to direct sunlight and exposure to the elements including rain, wind, dust, moisture. Temperature conditions can reach in excess of 100 degrees Fahrenheit.	IP 54
C	Outdoors	The real-time display is installed within a small covered area that is subject to indirect or direct sunlight and exposure to the elements including rain, wind, dust, and moisture. Temperature conditions can reach in excess of 100 degrees Fahrenheit. An example is a small covered area such as underneath an awning where the display will be exposed to outside environment elements.	IP 65
D	Indoors	The real-time display is installed within an indoor environment that is subject to indirect sunlight and exposure to the elements including wind, dust, and moisture, but not rain. Temperature conditions can reach up to 100 degrees Fahrenheit. An example is an area that is covered on most sides, but does not have doors. Thus, this indoor area will not have temperature controls and will be subject to some of the outside environment elements.	IP 54
E	Indoors	The real-time display is installed within a non-sealed (i.e., not IP rated) cabinet in an indoor area, where the cabinet is subject to wind, dust, moisture, and indirect sunlight, but not rain. Temperature conditions can reach up to 100 degrees Fahrenheit. An example is an area that is covered on most sides, but does not have doors. Thus, this indoor area will not have temperature controls and will be subject to some of the outside environment elements.	IP 54
F	Indoors	The real-time display is installed within a controlled environment that experiences low moisture, low wind, and no direct or indirect sunlight. Temperatures are controlled and can reach no higher than 80 degrees Fahrenheit (27 degrees Celsius).	None

The IP ratings are intended to protect the highly sensitive electronics of the display and the display controller (i.e., PC) from the elements. The following are the requirements for the IP ratings of the display enclosure.

3.4.1 ENCLOSURES WITH AN IP65+ RATING

This is the highest form of suggested protection for the eTIDs. The enclosure provides the only form of protection for the display monitor, any embedded PC and associated peripheral equipment. And, as the enclosure includes a cooling unit, it also provides the only form of climate control for the displays, which may generate and be exposed to high levels of heat.

The eTIDs should be installed in an IP65+ rated enclosure when the display assembly (display and enclosure) is installed in an outside environment subjected to all of the elements in particular rain, dust and moisture. Outside environments include sidewalk and planter areas, medians, uncovered parking lots, uncovered pier areas, bus shelters, transit center bus platforms (covered or uncovered), and any situation where the enclosure is in an outdoor environment as described in Section 4.1.

3.4.2 ENCLOSURES WITH AN IP 54 RATING

This is the second highest form of suggested protection for the eTIDs. The enclosure provides protection from moisture and some protection from dust, wind, and little protection from rain. Dust may enter the enclosure in dusty and windy environments, and water will get through during washdown of water (i.e., rain). The enclosure also includes a cooling unit.

The eTIDs should be installed in an IP54 rated enclosure when the display assembly (display and enclosure) is installed in an outside environment but has some form of additional protection from the outdoor elements. The additional protection items could include a non-sealed enclosure such as a Transit Information Display case, a covered walkway area that has walls covering most sides but does not have doors (e.g., pedestrian underground walkway areas, unpaid areas of BART).

3.5 REVIEW/APPROVALS PROCESS -

In order to ensure that the all eTIDs installed are functional and optimized within the regional 511 real-time system environment, agencies shall submit their plans and/or details for proposed eTIDs to MTC's Hub Signage Program Manager for review and approval.

Submitted details shall list the proposed sign's specifications and explain plans for how sign will comply with all other, non-specification-based requirements.

MTC shall sign off on the agency's compliance with the mandatory requirements and specifications listed in Section 3. This includes documentation that each eTID unit has passed all tests per the Testing Guidelines. This review is strictly for compliance with the mandatory elements and to ensure that any future issues that may arise do not originate from improper selection and installation of eTID hardware and peripherals.

MTC will also review for consideration system elements and provide input to the agencies. This input is intended to provide guidance on potential considerations that could increase the utility and operating life of the eTIDs proposed by the agencies.

3.6 WARRANTY

It is recommended that agencies obtain a minimum of 5-year warranty for eTID units (display and controller). It is the responsibility of the agency to replace or repair the eTID, should it fail, malfunction or cease to display real-time transit information prior to a five-year operating life.

3.7 MAINTENANCE CONSIDERATIONS

Agencies should develop a maintenance plan for keeping eTID unit functioning. It is recommended that the maintenance plan should include the following:

- List of system cleaning and preventive maintenance tasks to be performed on a regularly scheduled basis. Including, but not limited to:
- eTID units, especially cooling systems/fan vents
- network/ interconnect equipment
- Procedure of reporting problems with the eTID unit and network connections
- Assigning agency staff (with back-up staff identified) responsible for and knowledgeable in preventive maintenance and trouble-shooting of eTIDs.

Agencies should consider means for automatic monitoring of the eTID unit and network connections.

Agencies should consider using remote access software for configuration and troubleshooting of eTID units to minimize staff time and quicken response.

4. ETID PERFORMANCE REQUIREMENTS

In order to maintain a sense of consistency of the eTIDs under the Regional Real-Time Transit Information System, the following sections are minimum requirements for the eTIDs and the sign controller. Additional eTID unit specifications are located in Appendix A.

1. The eTID shall have the ability to display the specific contents of a web page generated by a website for real-time transit information.
2. The controller for the eTID shall include a Network Interface Card (NIC) for connection to the Internet and shall be able to launch and run a standard web browser.

3. The eTID shall be displayed in 16 x 9 format (landscape configuration), without the appearance of browser headers and operating system navigation and status bars. The sign display shall be the only item to appear on the screen at all times.
4. Scrolling-page signs shall not be permitted, but page alternation will be permitted. The display time for each page when pages are alternated will be subject to a pre-defined timer.
5. The eTID shall not be interrupted by any pop-up windows/alerts/messages that automatically appear in front of sign data and interfere with the dissemination of real-time transit information. Specifically, the system with which the sign is connected shall be configured to prevent all pop-up boxes/messages/alerts from automatic software update checks or other software configuration for alerts and messages. Items that normally conduct automatic update checks include, but are not limited to, the following:

- Windows (the system itself),
- Web browsers (Firefox and Chrome recommended – not IE)

Installed third party software (Adobe, antivirus applications, etc.)

6. The eTID shall not be interrupted by screen savers or popups of any kind that automatically appear in front of sign data and interfere with the dissemination of real-time transit information. Specifically, the system with which the sign is connected shall be configured to prevent screen savers and popups of any kind from appearing at any time.

APPENDIX A - SIGN SPECIFICATIONS

eTID units shall meet the following minimum specifications:

DISPLAY MONITOR

The display monitor shall feature reliable 24/7 continuous operation, designed to dissipate heat without fans, vents or filter, and able to work in temperature ranges specified. Display monitor size shall be in the 42” through 55” diagonal size families, and utilize LED back lighting panel technology to minimize power consumption. Display monitor shall have the following minimum performance characteristics, unless otherwise indicated:

DISPLAY	
Outdoor Rating	IP65 or better.
Resolution	1920x1080
Aspect Ratio	16:9
Brightness	2000
Viewing Angle (H/V)	178 degrees/178 degrees
LCD Module Technology	IPS offers superior off-angle viewing capability.
Response Time	
Speed at which pixels can change color. Lower response times mean better motion image reproduction.	8ms
POWER	
Power Supply	AC 100 - 240 V~ (+/- 10 %), 50/60 Hz (max)
Power Consumption (Typical/Max)	240W (max)
Power Consumption (Standby)	less than 5W
FEATURES	
Special - Lamp Error Detection, Anti Retention, Temperature Sensor, RS232C/RJ45 MDC, Built in Speaker (10W + 10W), Plug and Play (DDC2B), PIP/PBP, Video Wall (10x10), Pivot Display, Button Lock, Digital Daisy Chain, Smart Scheduling, Smart F/W update	
Multimedia Speakers - Additional speakers that supplement or enhance the sound generated from a monitor's internal speaker.	2 Built in 10W Speakers
DIMENSIONS (TYPICAL) WIDTH, HEIGHT AND DEPTH OF THE DISPLAY WITHOUT THE STAND, MEASURED IN INCHES (IN.).	
41.3" (W) x 23.7" (H) x 4.6" (D)	41.3" x 23.7" x 4.6" Screen diagonal: 42" – 55"
GREEN MANAGEMENT	
RoHS Compliant	UL 60950-1
MECHANICAL SPECS	
VESA Mount	600*400mm
OPERATION	
Operating Temperature	– 20 to +50 deg. Celsius (-4 to +122 deg. Fahrenheit)
Operating Humidity	10~80%

LOCAL CONTROLLER (PC)

The local controller (PC) shall include the following minimum specifications:

- CPU: Intel Core i5 or better
- Memory: 32GB RAM
- Ethernet: 10/100 network interface card (2 x RJ-45)
- Data Connectors: USB 3.0 (2 ports min, 4 ports preferred), RS-232 (optional 1 port),
- Display Connectors: HDMI (2 ports)
- Keyboard/mouse: USB
- Operating temperature: -10 to +50 degrees Celsius (+14 to +122 degrees Fahrenheit)
- Humidity Operation: 10-80% non-condensing
- Hardware Drive: 256GB

APPENDIX B - TESTING GUIDELINES

The eTID unit should be tested prior to installation (connected to test network) and after installation (connected to the permanent communication network). The below test plans provide guidance as to how this should best be accomplished. Please utilize these or submit alternative testing procedures for review prior to scheduling tests.

PRE-INSTALLATION TEST

The pre-installation testing of the eTID unit shall be done in a controlled setting (e.g. factory) on a test network connected to the Internet. The purpose of this testing is to identify and resolve communication and configuration issues prior to installation. This testing should be in accordance with the guidelines used for post-installation testing (environmental and time horizons modified as needed.)

The I.P. (Internet Protocol) address shall be obtained for each individual display monitor. Specific (static) IP address shall be made into a label and the label shall be affixed to the rear side of the monitor in such a place as to be easily noticed by authorized maintenance personnel.

Pre-installation test shall include all elements of the below post-installation test.

POST-INSTALLATION TEST

Upon installation of the eTID unit, post-installation testing shall commence to verify the proper operation of the unit. The post-installation testing shall be in accordance with the guidelines below. Note that these guidelines are

intended to be the minimum necessary to verify the proper operations of the eTID units. The agencies are encouraged to expand upon these test guidelines to further test the performance and operation of the eTID units.

- A. Monitor display shall be set to “full screen or full display or kiosk mode” and locked in that setting. This is to ensure that only information to be displayed is 511 real-time predictions and information. Display shall not show icons, or splash screens, or task bars.
- B. Browser display shall be set to 100% zoom level.
- C. Browser cache shall be emptied.
- D. Monitor display and communications to the monitor shall be set for automatic reboot after loss of power or signal to the display monitors. Display shall be automatically reestablished without manual intervention upon restoration of electrical power after power failure or outage or upon restoration of signal.
- E. Program each display monitor with the MTC/511-provided webpage URL and demonstrate that it receives and displays station specific real-time information regarding transit departures as obtained over the internet.
- F. Verify that all popups, screen savers and any other automated scripts are turned off.
- G. Launch the internet browser on unit and enter the 511 webpage URL.
- H. Confirm that the eTID unit is displaying the correct webpage for the specific hub site.
- I. Confirm that the logos and icons are displaying correctly and proportionally. If any images appear distorted or disproportioned, emptying the browser cache should resolve the issue.
- J. Operate the eTID unit and display the contents of the 511 webpage for a period of not less than seven (7) consecutive calendar days operating continuously over that time frame.
- K. Verify that over the course of the seven consecutive calendar days, the eTID unit has not stopped displaying the 511 webpage URL, or that any popups or screen savers have not launched over the webpage. If it has stopped or if the popups or screen savers have launched, the internet browser and 511 webpage shall be re-launched and the seven day period shall start over.
- L. Verify the operating temperature is meeting the manufacturer’s acceptable operating temperature limits regardless of the outside ambient temperature during the seven day test period.
- M. Verify that the inside of the eTID enclosure is not accumulating dust or moisture during the seven day test period.
- N. Test the latency of the webpage updates by comparing the changes to the eTID unit’s prediction against a separate display operating on a different Internet connection. The difference in the changes in predictions between the two displays should not be more than 10 seconds.

APPENDIX E

ADDITIONAL WAYFINDING INITIATIVES

VERSION 6.0—AUGUST 1, 2019



SPONSORED BY:



METROPOLITAN
TRANSPORTATION
COMMISSION